EDITORIAL
DOMESTIC ENGINEERING

Whole No. 1511 CHICAGO, NOVEMBER 26, 1921 Vol. 97, No. 9

FOR THIS WE ARE THANKFUL.

LAST Thursday, we Americans, or at least those of us who are not bothered by dyspepsia, parked our feet under the family table and proceeded to make known our choice of dark or light meat, or we entered some place with a sign indicating that food was to be had within, and we read down the printed cardboards stuck under our nose until we came to the word "Turkey." It was a feast day, though we know it as Thanksgiving Day. Some, no doubt, did stop and attempt to enumerate the things for which we had to be thankful, but a great many others instead of doing this worried about what it was costing us or whether or not we would get indigestion. A few people in this great country of ours probably went hungry, but the number of those who did is very small.

How many of us really took time to reflect on our fortunate condition? Millions of people in other parts of the world would have most gratefully received the food that we wasted; for in central Europe, Asia, and elsewhere whole families and communities are dying for the want of food and from exposure. In many other countries a large proportion live in constant fear of their lives because of revolutions and wars, and where these conditions do not obtain the people in several countries stagger under the heavy burden of a war debt that is crushing.

We Americans have indeed much for which to be grateful. We have a country rich in natural resources; a government which is sound and permits a great deal of liberty for the individual, and at the same time guarantees him security and the privilege of attaining any height he is able to reach; a class of people that is high-minded and yet practical and industrious; and leaders which at the present time are devoting their time and utmost efforts towards affecting a halt in the race of armaments and a curtailment in naval and military expenditures in order that the industrial world may again come into its own and future wars be made less probable. We are also enjoying a greater amount of prosperity than any other great country. So all Americans have ample reason for Thanksgiving.

Those of us who are connected with the building industry have still further reasons to be grateful, for not only have we enjoyed a fair share of prosperity during the past few months, but our prospects are exceedingly bright. The nation's business and governmental leaders are urging the people of this country to build, repair, and remodel now in order that there may be as little unemployment as possible during the coming winter months. We are short a great deal of building, in fact, we are short, according to Herbert Hoover, Secretary of Commerce, between $10,000,000,000 and $20,000,000,000 worth. This is a stupendous sum and signifies an era of great prosperity for the plumbing and heating industry in the near future, as much of this building is needed now.

We, in the plumbing and heating industry, have still further reasons for thanksgiving. Much progress has been made in this field. Many plumbing and heating contractors who formerly had some little "hole in the wall" on a back street, now have attractive places of business in prominent locations and are using modern methods in the conduct of their business. One of the most important developments has been in the realization on the part of many contractors and others in the field that the public has a right to know and should know more about the plumbing and heating business and the manner in which it is conducted. This realization has resulted in educational campaigns that are putting the contractors and others connected with the plumbing and heating industry in the right light before the public. These campaigns are already getting results and will accomplish still greater ones as the efforts become more widespread.

We have, indeed, much to be thankful for, and while pausing a moment to reflect on this, let us also determine to put forth our greatest efforts both collectively and individually for the progress and prosperity of the industry in order that the next twelve months may see even greater advancement.

Winter and "A Bath A Day."

The "Bath a Day" movement is not slowing up for winter. The Society of Sanitary and Heating Constructing Engineers, of Kansas City, Mo., has just ordered 2500 copies of Dr. Hubbard's booklet, "The Need of Frequent Bathing," for distribution among the school teachers of that city during its "Health Week." This propaganda is effective during either summer or winter. Keep it up.

THE FIRST YEAR *of a* BATH *a* DAY

A Review of What Has Been Accomplished Together With a Word About the Future

ONE year ago tomorrow—November 27, 1920, to be exact—"Domestic Engineering" gave to the plumbing and heating industry the "Bath a Day" idea. It has been said many times, and it will bear repeating, that before an industry can reach its greatest success it must find a simple means through which to translate its service to humanity to a busy people. A Bath a Day is that simple, understandable means.

The world and his wife buy ideas, not goods. That is to say, they spend money for goods, but what they really buy is the idea the goods represent. Thus it is that people spend money for phonographs in order to buy music; they purchase washing machines to cut down labor and to save the fading of colors and the mangling of buttons by persistent laundries; the pleasure of a shave a day has sold the safety razor and kept it sold.

It is the same with a Bath a Day. This idea kept before

A Window Display Featuring a Bath a Day at Toronto, Canada.

the public will sell plumbing and heating equipment. The more the idea of bathing is sold to the public the greater will grow the industry which the idea represents. It was because of this that the Bath a Day Campaign was started. And that is why "Domestic Engineering" has continued to push the Campaign—why it will continue to push it.

One year is a short time in which to expect results. Usually a year is just about enough time in which to get started. Yet during the twelve months that have so quickly slipped off the calendar great things have been accomplished.

"Domestic Engineering" is not egotistical about a Bath a Day. Why should it be? The idea belongs to the industry. Therefore, the final great success of a Bath a Day depends more upon the industry than upon "Domestic Engineering." We started this campaign, just as we have started other campaigns—that the plumbing and heating world might add to its profit and well-being. All we can ever get out of a Bath a Day—all we expect—is your good will and the satisfaction of having helped you to better help yourself.

The Value of Co-operation.

So, then, in listing the good work of the first year, please keep in mind that we are not forgetful of the splendid co-operation of the industry. Manufacturers, jobbers, contractors and plumbers' associations have done much to spread the Bath a Day idea. We know they will do more. Even those who have been a little slow—who are lagging behind, as it were—will fall in line soon or late. There is much

Bathe for Health

".....those who take daily baths are notable for health."

DR. NORMAN E. DITMAN,
in *"Home Hygiene and Prevention of Disease"*

One of a Series of Display Cards Sent to 50,000 Drug Stores by the Armour Soap Works.

rejoicing over each new booster. Alone we can do little; but, with all of us working together, we can do more than any of us ever have dreamed of doing single-handed.

Every plumbing and heating man is a translator. That is, his business is to translate the meaning of his work to the public he is trying to serve. A Bath a Day is one of the fine, easy ways to make this translation. And translations pay, and pay big. Don't forget that.

Along with the first announcement of a Bath a Day, you may remember, there were presented the endorsements of eminent medical authorities. Reprints of these as well as

THERE IS NO HEALTH GUARD EQUAL TO
"A Bath a Day"
The Convenience and luxury of modern plumbing fixtures are responsible for the daily bath becoming a national habit.

J.D. Johnson Co. INC.
SHOW ROOMS
Boerum Place and State St., Brooklyn, N. Y.

New York, N. Y., 52-54 Cliff St.	Newark, N. J., Fulton and Front Sts.
Philadelphia, Pa., 139-143 North 7th St.	Bridgeport, Conn., 277-281 Water St.
Camden, N. J., Newton Av. & Division St.	The Bronx, N. Y., 176th St. and Park Av.
Long Island City, N.Y., 378-384 Jackson Av.	Foundry, Hainesport, N. J.

Hundreds of "Ads" Similar to This Were Used Throughout the Country.

reprints of other articles and stories scattered throughout the year, were sent to leading newspapers and magazines. Many contractors succeeded in getting much of this good reading matter into their local papers. This publicity spread over the country, and it continues to spread.

Publications like "The Literary Digest," "Physical Culture," "Gas Logic," "Scribner's Magazine," "The New York Sun," "Philadelphia Public Ledger," and scores of others, have published bathing articles, and have used in various ways the reprints that were sent them. Such articles have been read by millions of people. Then, too, these articles, in part, are finding their way into hundreds of publications throughout the world.

The slogan contest attracted nation-wide attention. Before the contest closed, 1,296 slogans had been received. They were grave and gay, strong and not so strong; but each one presented an interesting angle of the bathing habit. The winning slogan was:

"A Bath a Day Keeps You Fit Every Way."

This was originated by Miss Ruth Goldstein, an employe of the Curtainless Shower Company, New York. The slogan is now spreading the gospel of a Bath a Day all over America. The amount of good that it has done, is doing, and will do, cannot be estimated.

The slogan was first made into a sticker for letter heads, envelopes, folders, statements—for everything that can properly take a small sticker. More than three million of these stickers have been used by manufacturers, jobbers, plumbing associations, contractors and others interested in more frequent bathing.

A little later the slogan was made into a transparent sign, 6¾ inches in diameter, done in black and orange, like the sticker, for dealers' windows. Ten thousand of these signs have been printed and one at least should be on every window of every plumbing and heating contractor in the country. This was followed by a poster, same design and colors,

Proper Bathing
helps every part of the body from the action of the muscles to the digestion of the food.
Through the tiny pores of the skin, impurities are removed from the body—unless the pores are properly performing their work the waste matter stays in the skin and impedes every function.
From this you may readily realize the necessity to health, beauty and even life depends upon keeping the skin in good working condition, otherwise it leads to serious trouble and eruptions of the skin are merely signs.
The present strain of high living, the dust, dirt and foul air in public places tend to make the skin unequal to its work — but nature has provided an easy remedy — BATHING it thoroughly cleanses, stimulates and purifies the pores and they immediately become more active, thereby assisting nature in removing impurities from the body.
Bathing is not only a duty, but it can be made a pleasure by providing a room of sufficient size, warm and light, furnished with high grade fixtures that please the eye.
Nothing is more repelling than a dirty looking, closed in, copper lined bath tub in a half-lighted room with no heat—of course it is better than nothing, but it is not a pleasure to take a bath.
For the past 15 years I have made a study of remodeling plumbing and keeping posted on all that is best in ventillation, drainage and fixtures.
Come in and see the new PEERLESS Bath Tub — the COLONIAL Lavatory — and NOISELESS Closets. Of course, they cost considerable more than the ordinary fixtures and everybody can't afford them, buf they give a higher ideal to live for.
A bath room and drainage system can be installed in your home that will add much to the joys of living — and you have only once to live.
When you employ NORMAN BOOSEY for your plumber you receive the best service I know how to give, whether it is to repair a closet or install a new drainage system and fixtures.
Telephone North 890
NORMAN BOOSEY, Master Plumber
540 GREENWOOD AVENUE
Remodeling and Repairing of Plumbing in the Home is my specialty. It requires careful fore-thought, a broad knowledge of sanitary conditions and reliable workmen.

A Bath a Day Run as a Newspaper "Ad" by a Master Plumber.

21 inches in diameter, for use on trucks and during local Bath a Day campaigns. Three thousand have been issued.

Answering a demand for something that school children could wear, ten thousand Bath a Day buttons—a reproduction of the sticker—were made. Many a boy, as he trudges unwillingly to school, wears a button that advances the bathing idea.

Then came a booklet, "The Need of Frequent Bathing," by Dr. S. Dana Hubbard, director of the Department of Health of the Bureau of Public Education of New York. This booklet is having a wide circulation both in and out

THE SATURDAY EVENING POST
IVORY IVORY IVORY IVORY
Begin the day right—
Bathe with Ivory Soap. Then the morning plunge will make you fit and eager for work or play.
IVORY SOAP 99 44/100% PURE

One of the Many "Ads" Used by the Proctor & Gamble Soap Company to Help Along a Bath a Day.

of the industry. A number of schools use it as supplementary reading, and the demand for it constantly increases.

Everybody remembers "A Bath a Day Week," sponsored last June by the Trade Extension Bureau. This week is to be repeated next June.

For several months local Bath a Day campaigns have been conducted by various associations, and hundreds of contractors have featured the idea in their newspaper advertising.

The Work of Other Industries.

It is easy to see that not only "Domestic Engineering," but the entire industry has been a constant booster for a Bath a Day. But that isn't all. Other industries, more or less associated with the bath, have taken up the idea and helped to push it forward.

The Proctor & Gamble Company, of Cincinnati, is featuring the bathing habit in its advertising in "The Saturday Evening Post," "The Literary Digest" and other national periodicals. In this way the idea is being carried to millions of readers. This company is very enthusiastic over a Bath a Day, and plans are now being thought out which will enable Proctor & Gamble to increase their efforts along the bathing line.

James S. Kirk & Company, which made soap in Chicago long before anybody made bath tubs in America, is also enthusiastic. This company is using the Bath a Day idea in its newspaper advertising in a number of the larger cities.

The Armour Soap Works, of Chicago, issued a series of five cards on "Bathing for Health," which were displayed in more than 50,000 drug stores. This was followed by a strip

for drug store windows, which read, "Take a Bath Every Day—You'll Feel Better."

This kind of association or supplementary work will be greatly increased during the coming year. Manufacturers of and dealers in bath accessories can be made strong allies, and as the plumbing and heating industry helps them, so, in turn, will they help plumbing and heating.

The Effect of the First Year's Work.

Since the Bath a Day campaign was inaugurated there has been a gradual change in public thought. It is now quite common to see in newspapers and magazines and in motion pictures and plays something about the benefits of bathing. The old jokes about the plumber also are slowly

Take a Bath Every Day
"A daily bath will do more to keep you in perfect health and vigor than any other one thing. A healthy skin is the best undergarment ever invented," says Dr. Woods Hutchinson, a physician of national repute.
Visit our showrooms and make your selection from the Bathtubs, Sitz Baths, Showers, etc., we have on display. See our showers fitted with modern Mixometer temperature regulators, which afford the most delightful form of indoor bathing, and inspect our complete line of
"FAULTLESS"
PLUMBING AND HEATING SUPPLIES
For Sale by Leading Dealers.
The M. L. Kline Co.
Wholesalers,
84-86-87-89 Front Street

Jobber Advertising Contributed to the Success of the First Year.

disappearing. The plumber and his work are beginning to be appreciated. All of this change may not be due entirely to a Bath a Day. Perhaps not. But a Bath a Day is playing an important part in the promotion of the welfare of the industry.

The United States Bureau of Education is doing a valuable work with the public schools. It is advocating more frequent bathing—at least two good baths a week for all school children. In September last it sent a better health bulletin to every school, and now instructors are going about instructing teachers how to instruct children how to bathe and breathe and eat and sleep.

Harvard University is rendering a similar service to large industrial plants, department stores and office buildings. Through bulletins all classes of employes are being taught the value of regular bathing.

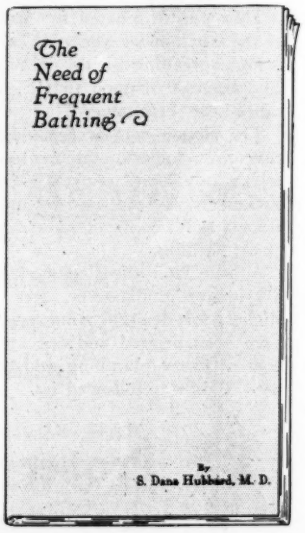
Several colleges and universities have made a rule that freshmen must take a bath a day. This is being done for two reasons. Many young men and women who enter college never have had the conveniences with which to bathe regularly. But if they bathe every day during their first year they are likely to get the habit.

Such work is of untold benefit to the industry of plumbing and heating. If a very small per cent of the men and women of tomorrow carry away from school the habit of a Bath a Day, that habit will add millions annually to the plumbing and heating industry.

Looking Into the Future.

The second year of a Bath a Day should be a very great year. It is then that we will begin to get what advertisers call "cumulative returns." That is, the work that has been done, plus the work that is being done, will pile up increased results.

Very soon now the much-thought-about booklet, "The Story of the Bath," will be ready for distribution. This story is written from a broad human standpoint. It will serve both the industry and the general public. It will provide a new foundation for a new year's work. It will create a new interest—a new enthusiasm—a new way to reach the public. Out of "The Story of the Bath" will grow many interesting things, which, in one way or another, ought to be of great value to every person in any way associated with the business of plumbing and heating.



30,000 Copies of This Booklet Have Been Printed.

But meanwhile the other features of a Bath a Day will be kept agoing. With more than three million stickers used during the first year, there should be used more than double that number during the second year. And so it should be with signs, posters, buttons, booklets, advertising, window displays and everything that enters into the campaign.

A Bath a Day has gone farther and done more during its first year than "Domestic Engineering" expected it to do. But now that it is a pretty husky child, all of us have a right to expect some very wonderful results before November 27, 1922. And if you will do your part as well as we promise to do ours, you will count many of your results on the right side of the ledger.

Statistics of the Association of Railway Executives covering the 12 months ended August 31, 1921, shows a net operating income of $530,655;927 or an annual earning rate of 2.9 per cent. Total operating revenues were $6,045,336,-100 against $5,724,912,265 in 1920, an increase of 5.6 per cent. Operating expenses were $5,161,760,829, a reduction of $218,876,981, or 4.1 per cent from 1920.

Railroads of the entire country except New England lines have voluntarily cut freight rates on farm products 10 per cent. The action was taken by the Association of Railway Executives representing 95 per cent of rail mileage of the country.

Per capita military expenditures for arms purposes are: Continental United States, $3.22; Great Britain, $12.35; France, $22.52; Italy, $6.70; Japan, $3.38. Figures including possessions or dependencies are: United States, $2.89; British Empire, $1.71; France, $10.24; Italy, $6.34; Japan, $2.42.

A Berlin special says that 37 German industrial corporations, which paid an average dividend of 7.8 per cent in 1913, paid in the business year ended June, 1921, an average of 22.1 per cent. Net profits were 22,579,943 gold marks, in 1913, and this year, 147,688,295 paper marks.

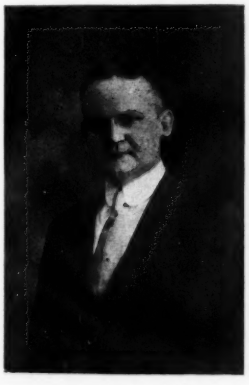
MAKING PLUMBERS *in* PHILADELPHIA

Philadelphia Master Plumbers' Association Co-operating With Public School Board Not Only Develops Apprentices Into Good Journeymen, But Also Educates in the Fundamentals of Citizenship and Sound Business Practice

By Edwin L. Seabrook

PHILADELPHIA has the largest local association of master plumbers in the country. It is also efficiently managed in every department of its association work; not the least of which is its interest in the apprenticeship problem and the co-operation with the Public School Board in vocational education as applied to the plumbing section. As a result of this interest and co-operation by the Master Plumbers' Association a great many plumbing apprentices have graduated during the past eleven years, after taking the four years' course. The classes were started in 1906.

The trade schools of Philadelphia are a part of the public school system of the city and are under the administrative management of the Board of Education and the superintendent of schools. Last year the trade schools were placed in a division known as Vocational Education and Industrial Art. As the name indicates the domestic science course for girls is included in this division.



D. F. Durkin, Jr. **William McCoach.** **George F. Uber.** **R. H. Pflug-Felder.**

Four Prominent Members of the Philadelphia Master Plumbers' Association.

The teaching staff consists of a director, William C. Ash, who has been connected with the Trade School since its inception in Philadelphia, and one associate director. In the plumbing section John S. Bross is head teacher. Mr. Bross is a practical plumber, knows every phase of the trade and business and is in charge of the drainage department of the city. He is also on the Board of Plumbing Examiners. There are ten class instructors. These are journeymen plumbers working at the trade during the day; the instruction is, therefore, entirely practical and not merely theoretical.

The course covers a four-year period, and only apprentices employed at the plumbing trade are eligible for it. The classes begin about the middle of September and continue for six months. Sessions lasting two hours, from 7:30 to 9:30, are held three nights each week, in two of the schools, Northeast High and Central High. There are no day classes.

Before the war there was an average attendance of about 500 apprentices five nights each week. Naturally, during the war this number was largely reduced, but is now showing a substantial increase. During the year closed, some time ago, there was an enrollment of about 350 in the two schools. The first class was graduated in 1909 and numbered 21. Some years the graduating class has numbered from 50 to 60.

The entire four years' course is extremely practical.

The first year the use of tools, solder, and soldering joints is taught. The second year drawing is taken up and pupils are taught to put their ideas in workable form and express themselves in an intelligent manner on paper.

The third year shop work, drainage codes and drainage laws are given.

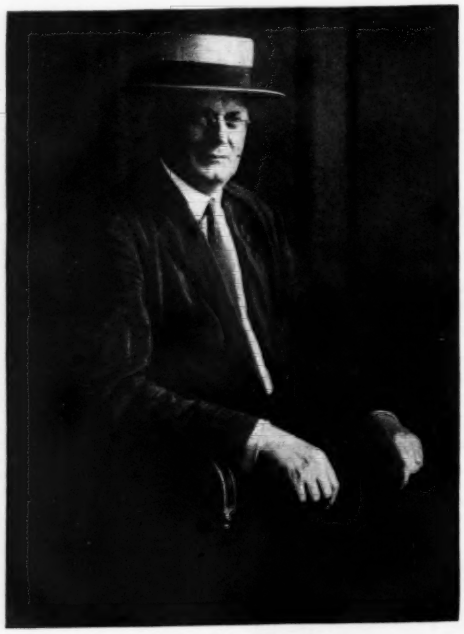
The fourth year is devoted to ventilation of rooms and rounding out the course.

Regular attendance is required. Students must present satisfactory explanation for absence, and must attend at least 70 per cent of the hours of any course in order to receive credit for the work.

This brief simple outline of the course does not tell the whole story by any means. Every phase of practical plumbing and the science and engineering connected with it are taught to the most minute details. For instance "water" as a subject may be explained and discussed for several evenings. Its expansion, contraction, freezing, seepage, pressure, or whatever its connection with plumbing, is handled in a most thorough manner by the instructors.

In the same way every feature of plumbing practice is taken up by the pupils. Tests are given the pupils during each term. They are examined at the end of the third year before taking the fourth-year course, also at the end of the fourth year for graduation.

Realizing that the apprentice of today will be the business man of tomorrow and that some training to fit him for this position is necessary, it is proposed to add book-



Wm. M. Anderson.
One of the Leaders in the Philadelphia Master Plumbers' Association.

keeping and some elementary features of business conduct for the fourth year. Some master plumbers have even gone so far as to suggest giving the pupil an outline of a building and let him design the plumbing and give an estimate of its cost installed complete.

The study course has been designed with the idea of making a practical mechanic of the pupil, to have him thoroughly understand the principles of the trade and the "why" of doing things. The instruction he receives in the evening classes explains and supplements his work on the job. He learns the reason for doing things in a certain way as well as doing them.

The study course and the method of imparting instruction to the classes is so thorough and practical that it has been copied by several large cities.

Mere instruction in the mechanical art is not the only feature sought in planning the study course. The pupil is considered as a citizen and a probable future business man. High ideals as a mechanic, business conduct, and citizenship are set before the classes. The pupil is impressed with the idea that it is not enough just to be a good mechanic and know how to do a piece of work well, but he must know how to conduct himself.

In his work he comes in close contact with the customers of his employer. In a certain sense he represents his employer, whom the customer will judge by the conduct of his employees and the manner in which they perform their work. For these reasons the pupils are taught how to conduct themselves before customers, how these should be treated, etc. Manners and dress also receive considerable attention in the instruction.

The art and practice of the plumbing trade is placed on a high plane by the instructors. It is dignified and not belittled. It is presented to the pupils as a profession, and not mere mechanical work with hands and tools, but something requiring technical skill, scientific, and engineering ability. Nothing of the latter is omitted by the instructors, in fact it is emphasized and held up as equally (or more) important than the mechanical knowledge necessary to assemble and install all the parts of a plumbing system.

The result of such training needs little, if any, comment. It means better workmen, better citizens, better business men, and probably the best of all, better employers. The effect of such instruction and training has reached further than the apprenticeship classes. It has spread among the employers who have come up from the ranks of the journeyman but who did not have the opportunity of vocational training. Many of these are inspired with the high ideals that are presented to, and absorbed by, their own apprentices attending the classes.

Shop efficiency is also stimulated in both employer and employee. One day there came into a plumbing establishment a set of plans showing difficult and technical work. The proprietor looked them over and admitted he did not feel competent to estimate on the work or undertake its installation. His fourth-year vocational student apprentice requested the privilege of going over the plans. He made up an estimate and gave his method for installing the work. The employer secured the contract and completed it without any difficulty—but under the supervision of his apprentice.

The results accomplished in Philadelphia did not just happen. Back of it all is a well devised plan and the most hearty co-operation of the Master Plumbers' Association. The latter works through its apprenticeship committee. There is team work between the director and his staff of instructors and the Association. Every social function given by or for the classes is backed up by the association members with their attendance. The employer who has an apprentice in the classes shows his interest by visiting them during the sessions.

The Master Plumbers' Association awards an annual prize in the form of a gold watch at the graduation exercises. This is based on excellence in work and regularity in attendance. The Murrell Dobbins endowment prize is open to every student in the industrial courses and this has been won more than once by plumbing apprentices.

World's Production of Crude oil in 1920 amounted to 694,854,000 barrels, an increase of more than 40,000,000 barrels over 1919. Total production of the world from 1857, when only a few thousand barrels were produced, to 1920, inclusive, was 8,744,972,000 barrels, according to the United States Geological Survey. The United States produced 63.8% of the world's output in 1920, and 62.1% of the total output since 1857, while Mexico produced 23.5% in 1920, and 6.1% from 1857 to 1920. In 1920 Russia produced 25,429,000 barrels, or 3.6% of the world's output; Dutch East Indies, 17,529,210 barrels, or 2.5%, and Persia, 12,352,655 barrels, or 1.8%.

British imports of iron and steel for nine months in 1921 showed a total of 1,135,791 tons, compared with 670,257 tons last year and 1,501,564 tons for the corresponding period of 1913. The figure is thus 25 per cent below 1913, but 69½ per cent higher than last year. More than one-third of this year's total consisted of pig iron and ferroalloys 432,349 tons, or nearly three times the quantiy in 1920 or 1913. Billets and slabs accounted for 211,619 tons—about the same as 1920, but only 37 per cent of 1913. Plates and sheets, 109,501 tons; iron bars, rods, angles, etc., 102,595 tons; steel bars, rods, angles, etc., 89,310 tons; and rails, 39,969 tons, were the next largest items in 1921.

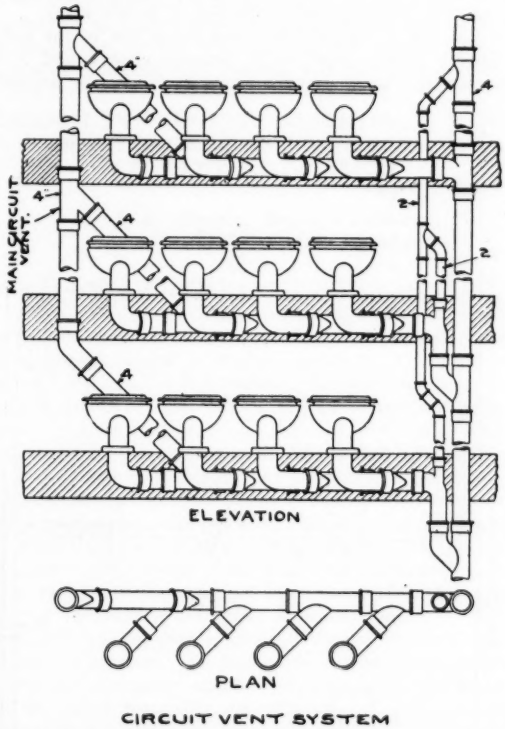
The New York Journal of Commerce says that the British coal output during the week ended November 5th, was 4,182,000 tons.

How Plumbing *is* Simplified *in* Atlanta, Georgia

Comments by W. C. Groeniger, Author of "Basis for Standards for the Adoption of Plumbing Codes"

IN THE October 22nd issue, pages 156 and 157, of "Domestic Engineering," A. B., of Decatur, Georgia, calls attention to our article and illustrations which appear in the issue of June 4th, pages 456 and 457, and submits three figures to show "How Plumbing is Simplified in Atlanta, Georgia."

The editor very ably defends our position with reference to Figs. 1 and 2, but favors A. B.'s arrangement as illustrated in Fig. 3 as against our illustration of Section 179 of the "Basis for Standards for the Adoption of Plumbing Codes," page 457, June 4th issue, of "Domestic Engineering."



CIRCUIT VENT SYSTEM

Mr. Groeniger's Illustration for Section 179 of "Basis for Standards for the Adoption of Plumbing Codes."

A study of air movements in soil, waste and vent stacks and drainage and sewerage systems will reveal that air is drawn into roof openings and through fixture openings at a rate of about four times the amount of the liquid discharge, the amount of air increasing in proportion to the amount of waste water that is discharged. Water displacing air and air displacing water is an ever changing condition that is taking place in the drainage system. The condition is aggravated in accordance with the height of the building, the number of fixtures and the amount of continual service required. The soil vent, waste vent, main or branch vent pipe supplies air to break the vacuum at and below the point of intake, prevents air locks and relieves back pressure at lower levels.

Air locks in water supply systems were quite common when the almost antiquated system of house tank supply was used. It was necessary to keep this system free from air and to also make provisions to avoid pockets or traps in which the air would lock.

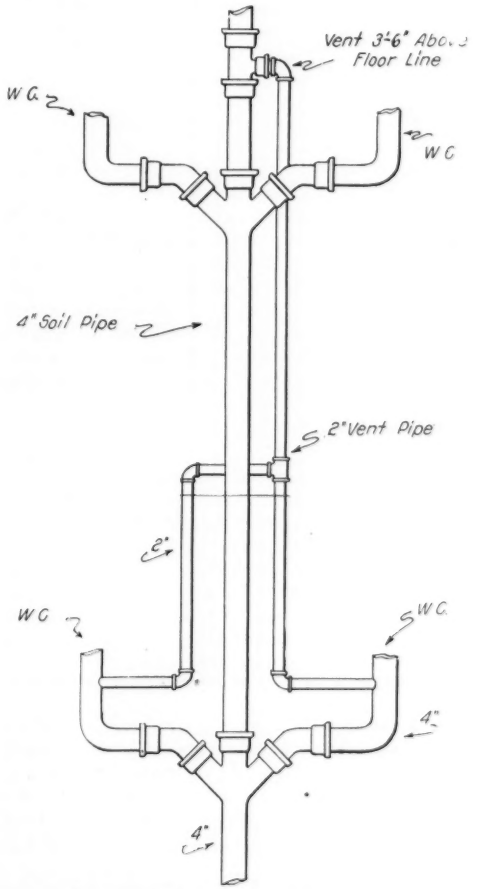


Fig. 1.—"How Plumbing is Simplified in Atlanta, Ga."

In the soil or waste stack, the pipe seldom, if ever, becomes entirely filled with water. There is always air present in lesser or greater quantities which may assist or retard the rate of waste discharge, in accordance with the amount of air necessary to break the vacuum and then be disposed of without creating back pressure at a lower level. Upon the rapidity in which replacement of air can be made will depend the efficiency of a drainage system, the principal function of which is to remove human excreta and urine, body

and domestic wastes as quickly as possible from a place or building used for human habitation or occupancy. Our experience has been that air movements in soil, waste and vent pipe stacks and in the house drain, house sewer and main sewer are of great importance in determining the proper sizes. Air locks in horizontal and vertical waste pipes are often responsible for the sluggish action of the sewage and its failure to scour properly, resulting in stoppages which could not be charged to size, grade or construction.

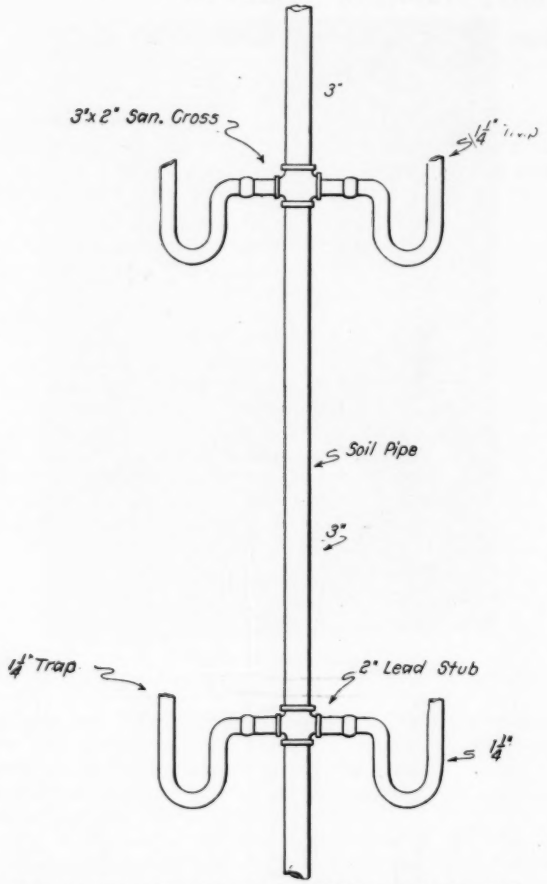


Fig. 2.—"How Plumbing is Simplified in Atlanta, Ga."

A. B.'s illustration in Fig. 3 is not provided with the relief vent one-half the diameter of the soil or waste stack taken off in front of the first fixture connection and rising at an angle of forty-five (45) degrees to vertical to a point six (6) inches above the top of the highest fixture on the branch before being offset horizontally or connecting to the branch, main, waste or soil vent.

The editor also favors A. B.'s arrangement without the relief vents as required in Section 179, illustrated on page 457. This circuit and loop vent system was designed as the outcome of experiments and tests which were made at the University of Illinois. This experimental work resulted. in the recommendation "that the air instead of the falling sewage should be the basis for the design of stacks in buildings." In other words, supplying and removing air in the proper quantities is of most importance in selecting the size of the pipe for any given number of fixtures.

Discharging fixtures on the several floors at the same time will create a condition where it is necessary to supply air to the upper part of the stack to prevent siphonage and removing the air boxed in between the various points of discharge. The main circuit vent will supply air to eliminate siphonage caused by the discharge of the fixtures on either branch but will not relieve the back pressure accumulated in the soil stack. The theory of increasing soil or waste pipe stacks to eliminate siphonage and back pressure does not always work out in practice as both the horizontal and vertical lines have become clogged due to lack of scouring action. Waste water falls in the enlarged stack in a dribble, usually without head and loses the necessary self-cleansing action. The efficiency of this type of system is reduced and the cost of the large size pipe is often greater than the smaller stack reinforced with the relief vents.

The principle of the circuit and loop vent system is that the upper half of the horizontal fixture branch will supply the air and the lower half will remove the sewage which requires that the connections on the horizontal branch must be made with Y branches laid flat. In addition to the number of fixtures to be served and the height of the building, other factors in determining standards which must be considered are submerged sewer outlets, sanitary sewers connected to combined sewers that carry rain water and other causes which may result in air pockets. Standards must be fool-proof and based upon minimum requirements. Therefore, we make provision that where fixtures discharge above, each branch shall be provided with relief vents one-half the diameter of the soil stack which will supply air to prevent siphonage and remove air which will also prevent back pressure and the blowing and oscillating of fixture traps.

A. B.'s Fig. 3 shows a flat vent taken out of the end of the branch which could easily become choked and is not self-cleansing. Good practice prohibits the flat or horizontal

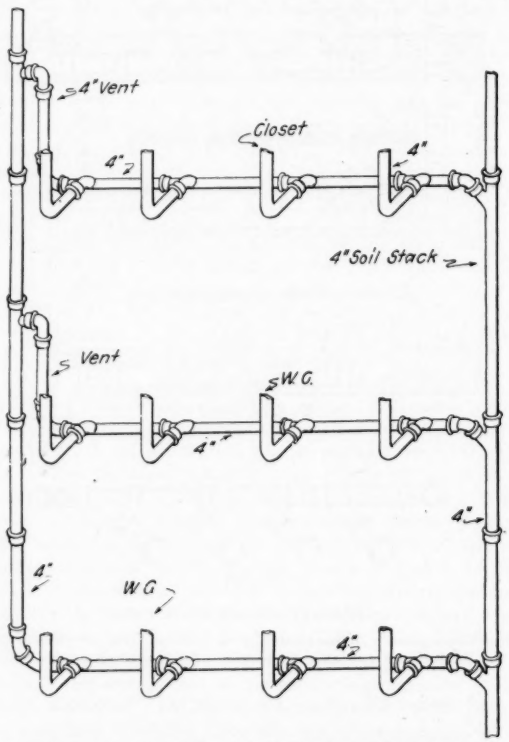


Fig. 3.—"How Plumbing is Simplified in Atlanta, Ga."

vent below the water line of a fixture. In the event of partial stoppage or full stoppage, the waste will back up to the height of the fixture top in the vent pipe. When the stoppage is relieved, it will be found that the solids will accumulate in the flat horizontal vents, and the repetition of the waste stoppage will eventually result in the vent pipe becoming entirely closed.

* * *

A. B. and the editor present the kind of constructive criti-

cism that we expected. Our only regret is that there has been so few A. B.'s that have taken the opportunity afforded to criticise or offer recommendations. Prejudice, precedent, local pride and indifference have long stood in the way of standardization of plumbing and plumbing materials. An examination of the many municipal plumbing codes now in force throughout the United States will reveal a great many inconsistencies. What is considered good practice in one city is prohibited in another. Each city has the best possible regulations. Most regulations are founded upon precedent and not upon real facts. Each city's ordinances or regulations are as in a kingdom "in which the king can do no wrong." Men who have been educated in the practice and theory of plumbing will always differ upon the many problems which the present and future hold forth. There must, however, be some common ground upon which the plumbing industry can unite if we are to make the necessary progress for the common cause. Codes and regulations must be adopted from an established minimum factor of safety. That minimum factor of safety cannot rest upon the cheapness of the system but upon its efficiency, durability and length of service. Experiments, tests, experience and research will give us the hydraulic and pneumatic conditions that are constantly taking place in the drainage and sewerage systems, and fix the number of fixtures that may waste into a stack or sewer of any given size. Experience, history, durability, and length of service will give us the quality, kind and weights of materials best adapted to a plumbing system.

FREEDOM IN INDUSTRY ESSENTIAL TO PROSPERITY. DANGER IN TOO MUCH GOVERNMENT REGULATION.

By J. H. Tregoe, Secrtary-Treasurer, National Association of Credit Men.

A man may lose his liberty and yet be a man. Industry as a human enterprise can never thrive without freedom. One of the great problems at present being fought out in our economic battles is whether industry shall be free or fettered. Freedom is not license. Freedom does not mean that one person or one enterprise can violate a number of others. It means nothing more than the privilege of reaching fixed objectives with due regard for the rights of others and yet thoroughly unshackled. Unreasonable taxation will cause business to hesitate because taxation limits the freedom of industry. Government control or over-regulation will throttle down industry, and no matter how ideal price fixing and similar forms of governmental regulations may be, yet in effect business will not thrive under it and the prosperity of the nation will suffer in consequence.

Industry must be free in order to do its very best. If our ambitions run along the line of industrial development, if we love our commerce and have a pride in its advancement. then we must recognize the necessity of giving to these human activities the very highest freedom and to place them merely under the responsibility of observing the rights and freedom of others.

There is so much in the atmosphere just now about the nationalizing of public utilities, and the feminine mind in politics will undoubtedly evolve a number of theories along the line of governmental regulation of industry, that we utter this word of warning and say emphatically that if we wish to be prosperous industrially, if we wish to thrive commercially, the courses must be perfectly free and human action must not be fettered beyond the point of assuring fairness and justice in the relation of one citizen to another, or one industry to another.

The threatened railroad strike has dissipated like the mist of a chill morning before the rising sun. Curiosity is but natural to know whether the brotherhoods were really in earnest or merely indulging bluster. In one form or the other the threat was in bad taste and distinctly contrary to the prevailing spirit and recuperation of the nation. Does it not teach us this, that wherever laws are unequally applied there results unfairness and disaster? If it is unlawful for railway executives to combine and force a walkout of their employees, should it not be equally unlawful for the employees to combine and force the railways to suspend? Common sense indicates that making a difference between these two classes of men merely because of their position is unwise, and should not be permitted to continue.

We have been so deeply interested in our various enterprises in the past two decades that situations of this kind have not engaged our attention to the extent they should, and we usually wake up when the disaster is imminent. To grip the nation by the throat and threaten its very life in the event that demands of any organization may not be considered is totally wrong and should not for the real health and progress of the nation be tolerated.

The majesty of public opinion must now be manifested and demand the equal application of the law, and what is an unlawful conspiracy for one must be an unlawful conspiracy for another. Never again should the nation be brought to a point of such deep a concern as the threatened strike occasioned at its inception, though on second thought the belief grew that the brotherhood chiefs were merely exploiting the strike for the purpose of bringing about a situation where their members could force concessions with the same success that had attended their previous efforts.

Our Declaration of Independence in declaring that all men were created equal did not mean that all men were mentally equal but that all men should have equal opportunity and be held equally responsible to the law. No discrimination must be the legend of our Republic, else we shall have to pay big sums and pass through many tribulations for concessions to any particular interest or any particular body of men.

WHAT IS BUSINESS?

The following paragraphs are extracts from an article, "The Real Meaning of Business," by Harry A. Earnshaw, published in the American Mutual Magazine:

"We need more than anything else a well organized, intelligent propaganda to create in the minds of all classes of society, the real meaning of business."

"Commerce is but the expression of the needs of the human race. The real interpretation of business is the service of man in the interests of man."

"It is impossible to point out any business which can or does survive indefinitely without performing a useful function."

"Nothing can endure in the realm of business, that does not contribute directly or indirectly to the needs of humanity."

"Work is service, unless you work you don't deserve. The man who puts only fifty per cent of himself into life, cannot expect life to turn around and hand him one hundred per cent. In the main, life's return to us is what we put into life."

"The whole business structure is an indissoluble entity. Nothing can happen to one kind of business, that does not affect, in a major or minor degree, all business. All service of every kind and description is interrelated."

Millen, Ga.—The Board of Education of this city is to erect a school building to cost $20,000. The building will contain six rooms. Scroggs & Ewing, Lamar Building, are the architects.

Cairo, Ga.—The Board of School Trustees here plans the construction of a $70,000 school building to replace the one recently destroyed by fire. The structure as contemplated will contain twenty-six class rooms and an auditorium to seat 750 people.

NEW MANHOLE COVER EFFECTS BIG SAVING

Bureau of Sewers of the City of Chicago Designs and Adopts New Manhole Cover Which Results in Great Saving of Time and Money. Other Cities and Corporations to Adopt It

ABOUT two years ago the Bureau of Sewers of the City of Chicago decided that a change in the type of manhole covers then used throughout the city was necessary not only to lower expenses but to bring about a means for standardization. At the time this change was suggested the manhole covers used were of a type that necessitated the expenditure of large sums of money in first installation and in repair work, especially when the covers were broken because of excessive traffic. They were neither

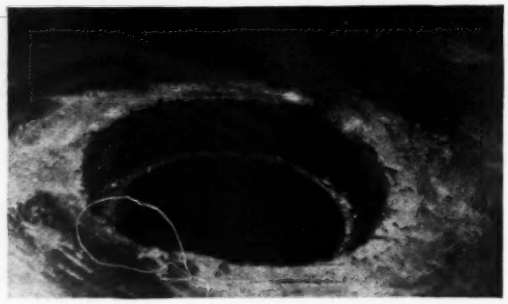


Fig. 1.

standardized nor easy to handle; they were, on the other hand, lacking in uniformity and were cumbersome to install.

The base, or the lower part, which is imbedded in the concrete foundation of the pavement, was cast in one piece, and when worn or broken it was necessary to tear up the street for several feet around in order to take it out and replace it with another of the same type. When it is considered that the minimum charge for making street repairs in Chicago in asphalt paving is $25.00; in brick, $20.00; in asphaltic macadam, $20.00; in granite blocks, the heaviest pavement, $20.00; in concrete, $20.00; in three-inch creosoted blocks, $20.00; in 3½-inch creosoted blocks, $20.00; and in four-inch creosoted blocks, $20.00; it can readily be seen that a new type of cover was necessary to eliminate these repair charges. Street repairs were not the only things taken into consideration by the Bureau of Sewers when the subject of new manholes was first discussed. Weight, and the rapidity with which the covers wore out, especially the inner flange which supported the lid, were other important factors. When this inner flange became so worn that it would not support the lid it was necessary to make a replacement. The old manhole cover was then scrapped and the price secured for it was indeed a very small amount, being in the neighborhood of $2.00. This did not mean much, and the city was losing money which otherwise could be saved with a more practical cover.

Some time ago, Francis Shanley, foreman of one of Chicago's sewer gangs, was asked by George E. McGrath, superintendent of the Bureau of Sewers, to suggest a manhole cover that would do away with unnecessary expenses and at the same time be practical in operation.

It was not long after this that Mr. Shanley introduced his plans for the present cover, which is now being used in all new street work.

Mr. Shanley's new cover is made in three parts, instead of the two as in the old covers, and is eighty pounds lighter. It consists of a base, an inner curb, and the lid, while the former one consisted of only the base and the lid. The base of Mr. Shanley's cover is permanent, needing no attention after it is once imbedded in the concrete foundation of the pavement. This base is shown installed in Fig. 1. In Fig. 2 the base is shown before installed. The base is 30½ inches in diameter, and the outer rim is one inch thick, with the inner upright flange three-quarters of an inch high and three-quarters of an inch wide. This is laid on a cushion of sand when installed so as to afford resiliency and to avoid breakage due to the weight passing over the top of the cover.

Resting on this base is the inner curb, shown installed in Fig. 3, and before installed in Fig. 4. This curb is 25½ inches in diameter and six inches high. The shell, or outer ring, is 1¼ inches thick, and the inner flange 2½ inches

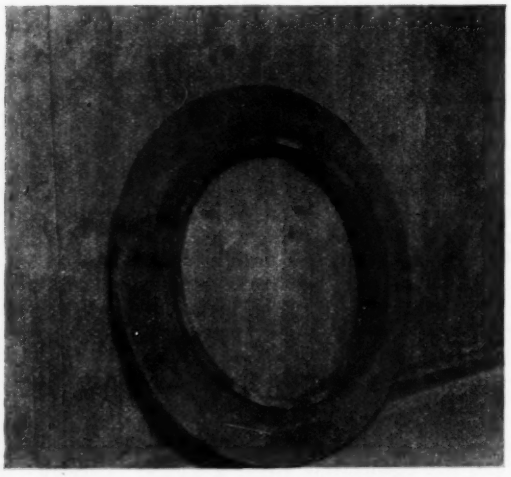


Fig. 2.

thick. The flange extends inward from the shell 1½ inches. This flange affords a resting place for the lid. It is here that the desirability and practicability of the manhole cover is most noted.

When the flange on the inside of the curb becomes worn, due to traffic passing over the lid, and will no longer support the lid, all that is necessary is to take the curb out and reverse it, putting the bottom of the flange, which has not be worn, on the top, and putting the worn part of the

flange on the bottom. In this way considerable expense is saved due to the fact that a new manhole cover is not necessary and there is no expense for repairing streets. As the base is permanent, it is not necessary that it be removed to make the change.

With the old type of manhole cover, it was absolutely necessary that the street be torn up and a completely new cover be put into place. If the inner flange of the curb of the new cover is worn out on both sides a new curb can be put into place and the old lid can be used, because all three parts of the cover are standardized and will fit any manhole in the city. It requires only six minutes to complete this operation. If the lid of the manhole located in a busy section of the city is broken another can be taken from a manhole in a nearby alley and used to take the place of the broken one. In this way there is a great saving in time, and the cost of upkeep is indeed small.

Figures compiled by the Bureau of Sewers show that in three operations on one manhole cover a saving of $93.00 has been made. This in itself is a great saving, and when it is considered that there are 400,000 such manholes in the city of Chicago alone, it can readily be seen that ultimately the city will save millions of dollars by the use of the new manhole cover. For the first installation of either type of manhole, the cost is the same, namely, $59.50. For replacement, the cost for the old type would be the same as price of the original, $59.50, as a new one would have to be put in, whereas, with the new type the only change that would have to be made would be the reversing of the curb, which would cost only $7.00, the labor necessary, a saving of $48.50. For the second replacement, the cost in the case of the old type would again be $59.50, while with the new type, the cost of replacing the curb, because of its being worn out on both sides, would be $8.00 for the curb and $7.00 for labor, a total of $15.00, or a saving on three operations of $93.00.

New York has voiced its approval of the new cover, and it is expected the city council there will recommend its use. Corporations such as the Commonwealth Edison Company and the American Telephone & Telegraph Company, have also favorably received the cover. As the manholes used by these corporations are somewhat different in design from those used by the cities, special arrangements have been made to have the cover conform with their design, but they will be based on the same general principle.

Another money and time-saving apparatus that is being

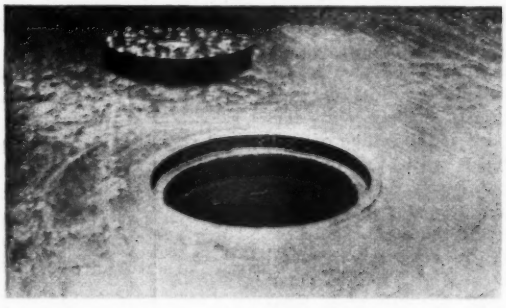


Fig. 3.

used by the City of Chicago is a sewage eductor. This consists of a large truck chassis, on which is mounted a waterproof metallic tank with a capacity of five cubic yards, and a stand pipe through which the sludge in the catch basin is pumped into the tank by the truck engine. Seven of these trucks are being used in the seven districts which comprise the territory of the Bureau of Sewers. Through the use of this apparatus it has been found that an average of $2.00 can be saved on every catch basin cleaned. This saving, it is said, has enabled the city to pay for the trucks within eleven months. The original cost of the trucks now in use was $49,000, and since they have been in operation the city has saved $300,000, which has paid for the trucks and left a considerable amount on the credit side of the truck ledger. During the month of September last, $2.51 was saved on every catch basin cleaned. The seven trucks cleaned 2,809 catch basins which contained 2,726 cubic yards of sludge. The cost of cleaning the basins, including labor, was $4,100.48, and the gasoline, oil, grease, etc., needed for the trucks amounted to $324.90. In cleaning this number of basins and hauling the sludge to a dumping field,

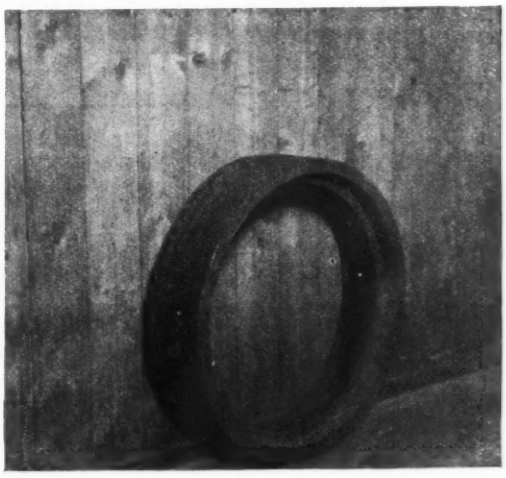


Fig. 4.

the trucks traveled 2,619 miles. Figuring ten cents a mile for depreciation, and $608.37 for repairs, it cost the city $5,295.65 to clean the catch basins. This is an average of $1.90 a catch basin. Cleaning 1,165 catch basins by hand during the same month cost the city $4.41 a catch basin, which, when compared to $1.90 for cleaning a catch basin with the eductor, shows the city saved an average of $2.51 on every catch basin cleaned.

Both the sewage eductor and the new manhole covers have resulted in saving of vast sums to the city of Chicago, and in all probability will soon be adopted by other cities.

Atlanta, Ga.—A bond issue of $8,858,000 for the construction of schools and extensions to the sewer and water systems of the city has been validated by the Supreme Court of Georgia. Most of the work called for in the bond issue will be started in the spring, and it is expected that considerable plumbing and heating work will have to be done in this connection.

Augusta, Ga.—The Marion Building Company plans to expend $400,000 in reconstructing and re-equiping its building recently damaged by fire. The new structure will be ten stories, 40x120 ft., of steel, stone, brick and terra cotta. G. Lloyd Preacher & Co., of Atlanta and Augusta, are the architects.

The cost of living in Great Britain at the end of October, 1921, averaged 103 per cent above July, 1914, and was the lowest since July, 1918. The percentage of members of trades unions idle was 15.6 at the end of October, against 14.8 at the end of September. During the month wages of 1,700,000 workers were decreased while those of 400,000 were increased, the net effect being a reduction in weekly full time wages of £430,000. During the month 25,000 workers were involved in 113 trade disputes in which 200,000 working days were lost.

AIR DISTRIBUTION *in* LARGE BUILDINGS

The Second of a Series of Articles on the Distribution of Fresh Air in Large Buildings, Such as Grammar and High Schools, Office Buildings, Department Stores, Public Institutions, Etc.

By Charles L. Hubbard

High Schools and College Buildings.

WHILE there is no dividing line between the treatment of grammar and high schools, there are certain arrangements which adapt themselves better than others to the conditions found in large buildings.

The methods of air distribution described in the present article are especially applicable to tall buildings and where the construction and arrangement of the partitions are such that it would be both difficult and expensive to carry up a large number of individual flues from the basement.

In the arrangement shown in Fig. 1 a single flue is carried from the fan to each story, and these are grouped in a single bank which makes the scheme still more simple.

Sometimes a single large supply flue is carried up, without divisions, and the proper amount of air delivered to each floor by means of adjustable deflectors. The illustration (Fig. 1) shows this method applied to a comparatively small building of three stories, as a matter of simplicity, but the same principle may be carried out in buildings of almost any size, either by extending the horizontal ducts or dividing the system into two or more units or groups, as shown in Fig. 2, placing an independent fan and heater at the base of each main uptake. Buildings from six to eight stories in height may be cared for in this way as well as those of two or three stories, simply by duplicating the arrangement shown in Fig. 1 and making the supply uptake of larger size. When this method of air distribution is employed it is necessary to

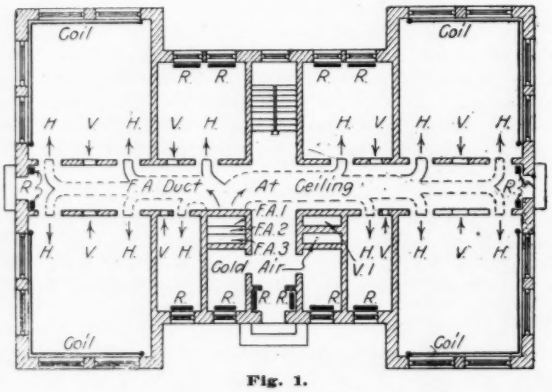


Fig. 1.

heat the building by direct radiation, as the air is supplied to all of the rooms at the same temperature. The usual method is to use wall coils or sectional radiators, as most desirable, thus keeping the heating and ventilating systems entirely independent.

Sometimes, when it is desired to keep the floor and space beneath the windows free for tables or benches, as in the case of laboratories or manual training classrooms, the radiator may be supported on suitable brackets in front of the air inlets, as shown in Fig. 3. This not only leaves the floor free, but also increases the efficiency of the radiating surface, due to the higher velocity of the air passing over it and thus equalizes the heat distribution throughout the room. Sometimes this location of the heating surface is made general

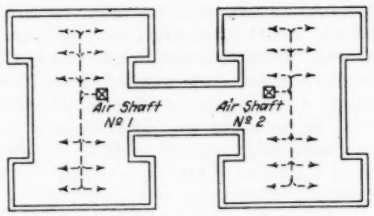


Fig. 2.

throughout the greater part of the building. The fresh-air distributing duct is carried in a "furred-down" space at the upper part of each corridor, and the air is commonly admitted through a register over the door unless some other location is more convenient for special reasons.

The general method of connecting the uptakes from the fan with the ceiling ducts on the different floors is shown in Fig. 4, which also illustrates diagrammatically the system of exhaust ventilation employed and the arrangement for the supply of cold outside air to the fan and the method of air rotation or re-circulation within the building. An inspection of this drawing shows a shallow vent duct carried at the ceiling of each corridor with the fresh-air duct directly below it.

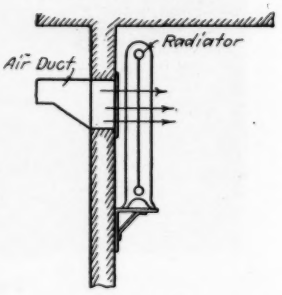


Fig. 3.

The register connections between the rooms and these ducts are shown in a general way in Fig. 1 and in detail in Fig. 5. The main horizontal vent ducts at each ceiling connect with a single main uptake leading to an exhaust fan in the attic, as shown in Fig. 4. The general location of this vent is illustrated in Fig. 1.

The method of bringing in the fresh air to the individual rooms over the doors from the horizontal supply ducts and regulating the volume is shown in some detail in Fig. 6.

The deflecting damper for varying the air supply is placed at the junction of the branch with the main duct, and is set by means of a rod reached through the register opening.

Before the registers are set in place, the air supply to the different rooms is equalized by means of these deflecting dampers, which are permanently fastened.

Air is shut off from the rooms when not occupied by means of the louvers or shutters of the registers by pull-cords which are easily reached from the floor.

In buildings where most of the rooms are in use more or less constantly, the register "valves" are omitted and simply metal faces or grills provided.

As some form of diffuser is generally needed to break up the entering air currents and prevent drafts, a register with the vanes in a horizontal position, set to throw the entering air slightly upward, will be found very satisfactory. If it is not necessary to close the registers at frequent intervals, the "lock" pattern, operated with a key, may be used and the vanes set to give the proper upward direction to the air. If the closing feature is desired, pull cords may be used and

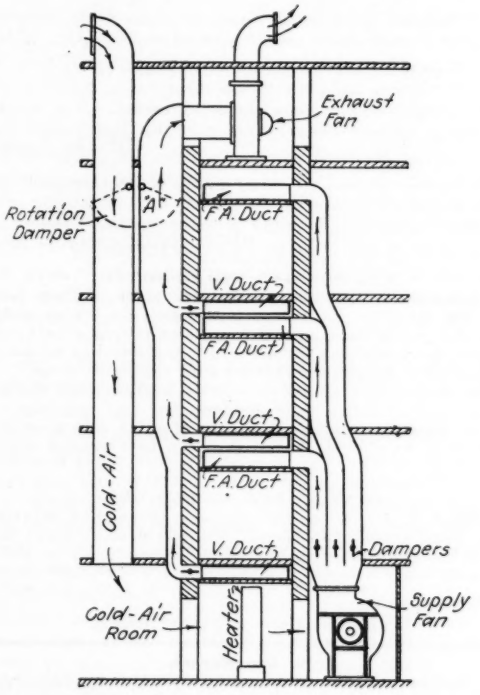


Fig. 4.

a "stop" provided which will prevent the vanes from opening to a horizontal position, thus getting the same deflecting effect.

The vent registers are best of the "lock" type, set to produce the proper air movement from the room. The volume of air supplied to, and removed from, each floor, is governed by dampers in the supply and vent uptakes, as shown in Fig. 4. These are adjustable and set once for all when the system is installed.

An interesting feature shown in Fig. 4 is the method of utilizing the cold-air supply downtake for a return flue for the recirculation of air within the building by the shifting of a "rotation damper" at "A". This damper consists of two doors, hinged at the top, and when hanging vertically downward, as in the drawing, close the passage between the two flues. When in this position, cold air passes downward from the top of the building to the cold-air room through the left-hand flue, while the exhausted air from the rooms passes upward through the adjacent flue to the discharge fan in the attic, as indicated by the arrows.

When it is desired to recirculate the air within the building, the rotation dampers are swung out to the positions shown by the dotted lines, thus opening a passage between the two flues and shutting off both of them just above this opening. By shutting down the exhaust fan and closing the outside window to the cold-air room, air will be drawn outward from the rooms through the vent registers, which in

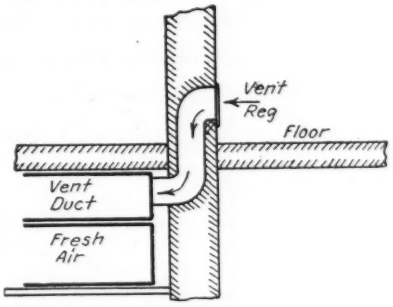


Fig. 5.

turn passes up the main vent to the rotation damper, then into the supply downtake and back to the fan through the main heater.

In an arrangement of this kind all dampers would be operated by compressed air, so that throwing a small switch or two in the fan room would make the necessary shift.

Among the rooms usually requiring special attention in a building of this kind are the audience hall, gymnasium and lecture room.

Audience halls in school buildings are usually provided with movable chairs or seats so that the floor may be cleared for drills, dancing, etc. An arrangement which has proved very satisfactory in rooms of this kind is shown in diagram in Fig. 7. The air is admitted through registers in the side walls about 7½ ft. from the floor and removed through registers or grills near the floor at the rear of the room and in the front of the stage. These, however, should be supplemented by ceiling vents under damper control for use in warm weather or at any time when the room becomes overheated.

In general, rooms of this kind will get uncomfortably warm, when fully occupied, even in cold weather with all heat shut off, after the audience has been assembled for some time, and ceiling vents will be found necessary to relieve this condi-

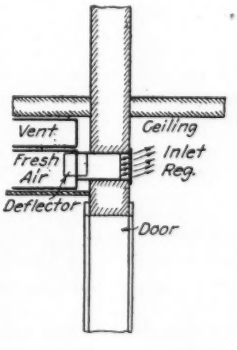


Fig. 6.

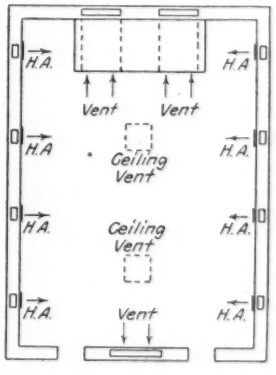


Fig. 7.

tion. Although direct radiation is used to some extent in buildings of this kind, it is more customary to employ one or more indirect heaters in the basement air ducts leading to the room, controlling them by room thermostats properly located.

In the case of gymnasiums the arrangements should be much the same as for a hall. When there is an elevated running track or narrow gallery, a portion of the air should

be admitted above this. As a gymnasium is in use for only a portion of the time it should be planned for independent operation by means of separate air ducts and lines of piping. Sometimes in large and important buildings it is provided with a separate fan and heater.

Lecture rooms are usually furnished with raised seats, as in Fig. 8, having a space beneath. In cases of this kind the

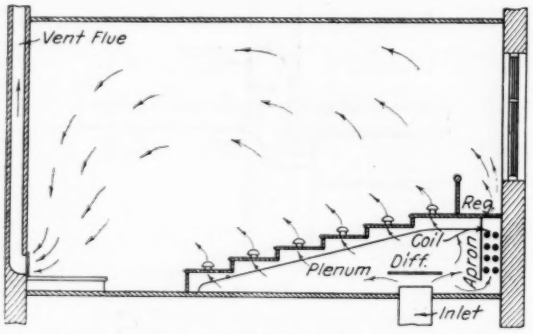


Fig. 8.

best results are secured by discharging the air supply into this space by means of a diffusing outlet, and admitting it to the room through mushroom ventilators beneath the chairs as in theatres.

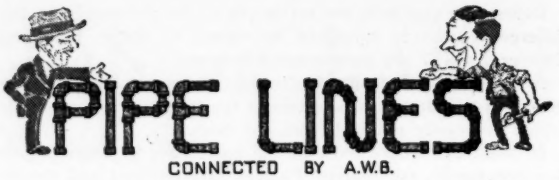
Exhaust ventilation may be the same as for class rooms. That is, through wall registers near the floor at the sides of the speaker's platform. A good arrangement for heating a room of this kind is to place a double coil at the rear, beneath the raised platform, with a line of narrow register faces above as shown in the illustration.

Improvement in foreign trade in October both in this country and in Great Britain is another of the multiplying signs that the worst of the world depression has passed. American exports in October were $346,000,000, as compared with $325,000,000 in the preceding month. Imports in October were valued at $183,000,000, as compared with $179,000,000 in September. The gain was thus relatively greater on the export side.

A hopeful sign in the domestic business situation is furnished by Bradstreet's report on building operations in October. Permits issued in 157 cities during that month covered operations valued at $167,000,000. This compares with $152,000,000 for 163 cities during September and with $92,000,000 a year ago. It is the largest value since April, 1920. As the cost of building is decreasing, it is clear that the figures represent a considerable increase in the physical volume of construction. The heaviest increases are in the district around New York and in the Pacific Coast States. Most of the new building probably is residential in character; it is, nevertheless, an important factor in stimulating business recovery.

At a preliminary hearing of the Lockwood Housing Committee in New York, it was recommended that legislation be introduced at Albany in January extending the building period under the present tax exemption law eighteen months and extending the rent laws from one to two years. Senator Lockwood announced that more than $200,000,000 worth of homes have been started in this city under the present tax exemption law. It is now the committee's plan to lengthen the period for construction eighteen months after April 1, next, provided the buildings were started before that date. Homes completed within that time would not be subjected to taxes until April 1, 1932.

The assets of the Shipping Board, excluding the fleet of merchant vessels, unexpended appropriations of Congress and contingent cases of Admiralty claims, exceeded all liabilities by $191,522,000 on July 1st, 1921.



THEN AND NOW.

Then—they never had a bathtub,
Now—we take a bath a day;
Then—the rooms were cold and cheerless,
Now—they're warm and always gay.

Then—they took no bath in winter,
Now—a shower all year round;
Then—they hauled water from the well,
Now—in every home it's found.

Then—there were no hardy plumbers,
Now—there's one on every street;
Then—the heating was a problem,
Now—who worries 'bout their heat?

Then—life's pendulum swung slowly,
Now—it's swinging pretty fast;
Then—the trade was but an infant,
Now—it's growing, growing fast.

REX, St. Louis.

Journeyman Plumber: "Why is the hourglass made small in the middle?"

Master Plumber: "To show you the waste of time."

MIKE QUINN, Scranton, Pa.

CLEANLINESS AND SO FORTH.

So Charlie Chaplin has found more than one use for the bath. It helps to keep reporters waiting. Which reminds me of the young lady who was upstairs taking a bath, when, hearing the voice of a caller, and being anxious to see him, she hurriedly slipped on the top step and came down.

FELIX, New York.

A plumber who has lost three umbrellas this year wants to know if he should charge them up to overhead expense?

S. S., Denver.

DUSTING OFF AN OLD ONE.

Smith met Jones on the street. Jones was wearing a black band around his sleeve. "Who's dead?" asked Smith. "I just lost my mother-in-law. It's hard to lose your mother-in-law." "Hard?" echoed Smith, "why it's almost impossible."

L. B. F., Chicago.

THE WEEK'S BEST WHEEZE.

Be Considerate.

Rastus Johnson had invited the Baptist preacher to his home for Thanksgiving dinner. The preacher was about half through with his second helping of chicken when he paused and asked: "Brudder Johnson, where did you all git dis heah most scrumptious chicken, if I may ask?" After a moment of nervous hesitation, Rastus answered: "Deacon, when I goes to church an' hears your pow'ful sermon, does I ask you where you gits your sermon?" "No," drawled the preacher. "Well, den, Deacon, I hopes you'll show me de same considahration."

A. L. X., New Orleans.

THE LIMIT IN VANITY.

A baldheaded man who wears a wig, and then sprinkles salt on it to look like dandruff.

S. P., Dayton, Ohio.

SPEAKING OF BATHING.

While there's soap,
Why there's hope;
While there's water,
Why you oughter.

K. K., Tampa.

"If we should decide to reduce our armaments," said the much-married man, "we wouldn't have anything left in our house but the piano and the bath tub."

I'm looking for a joke from you.

A. W. B.

LEGAL QUESTIONNAIRE

*As Subcontractor Can I Secure a Mechanic's Lien Entirely Apart from the Rights of the General Contractor? This Question is Answered in a Most Careful Manner**

By "The Judge"

Discussion of Mechanic's Lien Rights of Sub-Contractor Who Has No Relations Direct With the Owner.

Editor "Domestic Engineering":—As I am about to enter into a contract for the plumbing work of a large building operation, will you kindly tell me what I should do to secure myself the advantage of a lien. It is my first large contract and I do not know much about the financial ability of the owner and have not much more knowledge about that of the general contractor. A friend of mine in the same business from another state has made some claims about what he does under his contracts, which seem to me to be very different from what I understand to be the law in my state. Have I a right to a lien entirely apart from the right of the general contractor? G. W. S.

Answer:—The right to a mechanic's lien is not confined to persons who have contracted direct with the owner of the real estate, but has been extended by various statutory enactments to sub-contractors and material men who furnish materials and do work under a contract with the general contractor. This general statement is undoubtedly pretty well understood by those who are engaged in the building trades, but the limitations of this rule and the many subordinate rules which are applied when determining the rights of the several parties to a building project are probably not so clearly understood.

It is not every bit of work or every fixture furnished by a sub-contractor under orders from his general contractor that can be charged up against an owner when a sub-contractor tries to establish his lien rights against the owner's property, for it is essential that the work or materials for which a lien is claimed by a sub-contractor should have been performed and furnished in conformity with the terms of the contract with the owner, and that the owner should be actually liable therefor according to the terms of his contract with his general contractor.

Except in the case of an extensive building operation, it is very probable that a sub-contractor does not pay much attention to the details of the general contractor's agreement with the owner otherwise than to be certain that an agreement of some kind does exist. This is especially true of parties who furnish materials only and who simply deliver their goods on the premises, leaving the work of fabrication into the actual building to others.

As in many other business situations, the sub-contractor usually gives little thought to the protection of his lien rights until after the need of them has arisen. He ordinarily commences operations with faith in the general contractor and it is only when he first begins to wonder whether he is going to be paid for his work that he investigates the status of his lien rights.

Recent legislation in some of our states has made it imperative that sub-contractors should safeguard their lien rights from the very start of the building operations if they are to be certain of payment under the lien laws. In some states, for instance, as in your own, it is necessary that the general contractor should have a written contract with the owner, if you are to work out a lien under lien rights, and no lien attaches even then, until the notice of the written contract has been properly filed in the registry of deeds, and then the lien attaches only for the work and materials performed and furnished after the filing of the notice of the lien.

Most states have shown great solicitude for the sub-contractor and materialman, but always safeguarding the rights of the owner. Generally speaking, two systems known as the New York System and the Pennsylvania System, have been adopted throughout the country. The first of these to go into effect, that of Pennsylvania, provided that the mechanic who did the work and the materialman, as distinguished from the builder or undertaker of the contract, should have a lien directly on the building or on the land, but subordinate, of course, to the lien of the general contractor. The New York plan, so-called, gave only the general contractor a lien in the first instance, but by what was called "equitable subrogation" allowed the sub-contractor to work out his lien in the shoes of the general contractor by giving notice to the owner of his unpaid claim and requiring the owner to withhold the amount of his claim from payments to the general contractor.

The principal distinction between these two systems is, that under the New York rule the sub-contractor cannot recover more than is due from the owner to the general contractor, while under the Pennsylvania system, the original contract price or payment to the general contractor, is no defense to the lien rights of the sub-contractor. In order to understand the lien laws of any state it is essential that the distinctions between these two rules be clearly understood, for not only have different systems prevailed in different states, but in some instances the legislative history of a single state shows that each of the two systems mentioned have prevailed therein at some period. It therefore follows that many propositions of law which are laid down in connection with one of the two systems are totally inapplicable and would even be incorrect, where the other system prevails.

Of the two systems mentioned above, the New York rule seems to be the one which is gaining in favor, as evidenced by recent legislation. Modern business would seem to require that an owner or a bank should have some definite means of knowing what is due or to become due under a contract; the owner, that he may know the extent of his liability; and the bank that it may know the total amount of incumbrances when it extends a loan to the owner. Under the Pennsylvania system it would be possible for an owner to become liable for double or almost double the value of the improvement to his property, for he might pay a dishonest

***Every Effort is made to the End that these Answers may be authoritative. However, we cannot assume any Responsibility because of the Very Nature of the Service, which is rendered without a personal interview.—Editor.**

general contractor all, or almost all of the contract price, and still be liable for the bills of the various sub-contractors.

It is almost a necessity for a sub-contractor to give heed to his lien rights from the very start of operations, if he wishes to take full advantage of the security which is his under the lien laws of his state. In your own state, as an an example, if the general contractor has not filed a notice of his written contract, it is necessary that you take action on your own account if you wish to work out your lien rights later. Careful contractors make it a practice to file lien notices in every case and are overcoming the prejudice which exists against such practice in the shape of fear that the owner will be insulted. They realize that a reasonable owner will not consider himself insulted by such action any more than he would be when a mortgage is recorded.

Under the New York rule, in some states it is held that the general contractor himself must be entitled to a lien before the sub-contractor can have such a right, while in other jurisdictions the controlling requisite of the sub-contractor's right to a lien is that there shall be something due or to become due the general contractor, and the lien attaches only to that extent, unless the owner has violated the duty imposed upon him by statute to withhold sums due the general contractor in order to meet such claims.

It is sometimes of vital importance, when determining whether a lien claimant is entitled to a lien, or whether he has complied with the provisions of the statute in order to perfect his lien, to decide whether the lien claimant or the person with whom he contracted stands in the position of a general contractor or a sub-contractor. At first thought, this would seem to be of very easy determination, but it is not always so. Take for example a case which arose in Illinois, where, after a contract had been entered into for the erection of a house for an entire sum, the contractor took another person into partnership in the matter of the mason work, but not in the other work, and the owner made no agreement with this new firm. It was there held that, as to the mason work, the partnership was a sub-contractor and should have taken steps to protect its lien interests accordingly.

In another case, in New York, N. Y., it was held that where two or more persons jointly, as general contractors, entered into a contract to erect a building, and then later agreed among themselves that each should do a particular portion of the work and receive a specified part of the compensation, this made each of them a sub-contractor under the original contract and that they would have to work out their lien rights on that basis. On the other hand, on similar facts, the courts of Wisconsin and California have held just the opposite, to the effect that the several contractors remained as general contractors throughout the entire work.

As a general rule sub-contractors and materialmen are chargeable with notice of the terms of the original contract and their rights are controlled by such contract. But it is to be noted that the contract cannot enlarge their lien rights under a statute and give a lien to a person who is not entitled to one under the law.

The importance of knowing the terms of the original contract will be realized when it is stated that if the mode of payment as set out in the original contract is inconsistent with the existence of a lien in favor of sub-contractors or others, no lien rights exist unless the owner has by his conduct deprived himself of the right to set up the terms of the original contract against the lien claimant. An owner cannot be compelled to pay money to a lien claimant before it becomes payable according to the contract between the owner and the general contractor.

Some states hold that an original contract may contain a provision or stipulation against liens which is binding upon all persons who furnish labor or materials, provided that it is clearly and plainly stated. But the more general rule is that the owner and contractor cannot by contract between themselves deprive the sub-contractor, materialman or workman of the right to a lien which he has been given by statute.

In your own case, it is important that you first find out whether your general contractor has a written contract with the owner and then also, and this is exceedingly important, whether the general contractor has filed a notice of his contract in the registry of deeds. If neither of these things has been done, it is still possible for you to have a lien if you have a written contract with your general contractor and file the proper notice of it in the registry of deeds. If your general contractor has taken the proper steps to protect his lien rights, you have a right to work out your lien under him, but you must be sure that he has taken the proper precautions and in the future takes the necessary steps to protect himself, for you can have no more than he could have had.

CITIZENS ENFORCE LANDIS AWARD.

There is no doubt in the minds of leading citizens of Chicago that the Landis award will be enforced and the building situation cleaned up. The simple reason for his faith in enforcement is bred of the fact that a potent citizens' committee has begun its functioning, says "The American Contractor."

The Committee Makes First Report.

Where so many of Chicago's battles are fought and afterward reviewed—the Association of Commerce Wednesday luncheons at the LaSalle Hotel, a packed and jammed throng listened last week to the first tangible results of the committee's efforts to set into motion a program to enforce the award.

The high lights of the meeting are summed up as follows:

(1). There are forty-four out of fifty-one trade unions which have accepted the conditions of the award. These unions will receive one hundred per cent support from the citizens' committee.

(2). In the case of the seven recalcitrant unions, men will be placed upon jobs regardless of their union affiliation.

(3). A vast sum of money will be at the disposal of the committee.

(4). Contractors who co-operate will be given protection and will be helped to get men. Contractors who violate will have very heavy pressure exerted against them.

(5). Chicago's building situation will be cleared regardless of sacrifice on the part of interests which may perhaps have to sacrifice to the point of extermination to clean up the conditions.

Thomas E. Donnelly, who was afterwards referred to by Benjamin Rosenthal as the Hercules, who would clean Chicago's Augean Stables, spoke on the subject of Chicago's situation and gave the report of the committee.

Mr. Donnelly did not spare contractors or building trades or material men in his arraignment of the Chicago situation which he pointed out had been growing steadily worse but no one dared to tackle the job of cleaning it.

Then he gave a brief resume of the strike last May which lasted six weeks and the appointment of Judge Kenesaw M. Landis as arbiter, and of Landis making a thorough study of the situation and deciding that to merely cut wages would not reduce the cost of building unless conditions were changed. After the award came the period of test and some contractors fell by the wayside and some of the unions proved recalcitrant. Mr. Donnelly asserted that the unions which had come clean would be protected one hundred per cent and that in trades where they have not come clean, "we shall see that the work is carried on."

The citizens' committee was formed at the request of the contractors, and now it is a question of enforcing the award or admitting that the whole citizenry must lie down and accept conditions they do not want to accept. A call will soon be made for money to carry on the campaign.

SIZE *of* MAINS *for* HOT WATER HEATING *and* METHODS *of* INSTALLING BRANCHES *and* RISERS

Answering in Minute Detail an Intricate Question Submitted to Our "Questions and Answers" Department

THE proper sizing of hot water mains will depend upon certain conditions of installation. If the main is of ordinary length, as might be found in residence heating or the heating of buildings of average size, there is no better method of determining the correct size than by the computation of the valve area to be supplied. The area of the main supply as it leaves the boiler should slightly exceed the combined area of all valves or the valve connections to the radiators.

These observations are made in answer to a letter to the "Questions and Answers" department which was worded as follows:

"Editor, 'Domestic Engineering':—I would like to know which is the proper way of getting the correct size of a hot water main? Should the area of the main equal the combined areas of all valves supplied by it, or will a given size of pipe supply a certain amount of radiation as some trade books advise? And should the branches supplying the risers to second or third floors be taken from side of main and also branches to radiation on first floor, that are located near boiler? And where a riser supplies radiation on second and third floors, should the second floor radiation be favored by the riser connection as shown (See Fig. 3), or will it work better by running risers straight up, and take branches to second floor radiation from the side of riser?

"Kankakee, Ill. "S. L."

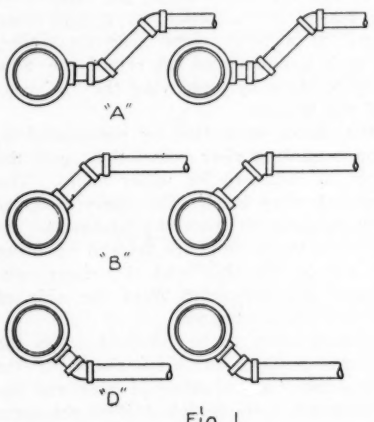


Fig. 1

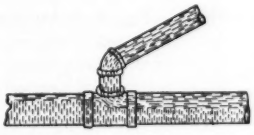


Fig. 2

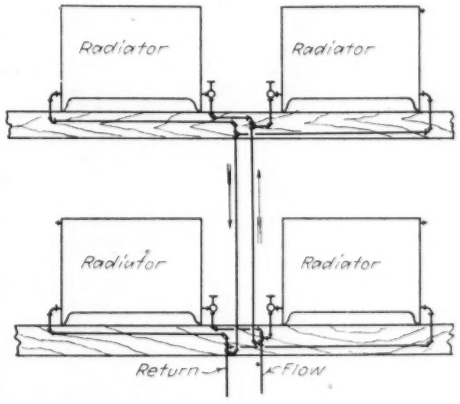


Fig. 3

The assumption that a main of a certain area will supply a stated amount of radiation regardless of the number of units into which this radiation is divided, and regardless of the position of the radiators, is wrong and misleading. Two important factors should be considered, volume and velocity. The volume of water circulated is conditional upon the area of the pipe and the velocity of this circulation by the frictional resistance to the flow. If the radiation is divided into a considerable number of units the many fittings required, together with the number of bends or turns in the piping and the length of it, are factors that greatly increase the amount of friction and reduce the velocity of the flow. The velocity of the hot water passing through the radiator, considered with its temperature, determines the rate of heat emission or the number of B. t. u.'s given off by each sq. ft. of surface.

It is important, first of all, that the proper size of radiator valves shall be employed. The position of the radiator in the building, that is to say, the distance from the boiler and the height above it, as well as the footage of radiation, should determine the size of valve to be used. Then again, the character of the system used must be considered. It is a very simple matter to adhere to these conditions or requirements once they are understood and appreciated. For example, we know that the water in an accelerated or pressure system circulates several times faster than the water in an open tank gravity system, therefore, in order to obtain like results in the number of B. t. u's. emitted from the radiators connected to the latter system, the valves should have a larger area than would be required for the former, or accelerated system, for radiators of silimar size and location. As we shall more fully explain later, hot water exhibits a tendency to flow quickly to the highest point of a heating system. Owing to this fact a pipe or valve of certain size or area will supply more radiation on the second floor of a building than it will on the first floor, and still more on the third floor than it will on the second. A knowledge of

this and similar requirements is essential in order to properly design an up-to-date hot water heating system. Correspondent may be familiar with valve area requirements; however, we shall give the sizes required for various radiators, size and location considered. For an ordinary up-fed open tank hot water system we give a list of valve sizes that is considered conservative and safe. In this respect attention is directed to the so-called "standard" sizes of tapping as published by certain manufacturers of radiators. We do not know from what source these sizes have been obtained but it is certain that the information was not secured from any actual tests.

Radiator Tappings for Hot Water Heating.
(Open Tank Up-fed System.)

Size of Radiator.	Size of Tapping.
First Floor.	
25 sq. ft. or less	¾ inch.
25 to 50 sq. ft.	1 inch.
50 to 85 sq. ft.	1¼ inch.
85 to 125 sq. ft.	1½ inch.
Second Floor.	
40 sq. ft. or less	¾ inch.
40 to 60 sq. ft.	1 inch.
60 to 100 sq. ft.	1¼ inch.
100 to 175 sq. ft.	1½ inch.
Third and Higher Floors.	
50 sq. ft. or less	¾ inch.
50 to 80 sq. ft.	1 inch.
80 to 125 sq. ft.	1¼ inch.
125 sq. ft. and larger	1½ inch.

In the event of extreme exposure or of radiator being placed in a position where circulation to it is difficult, use one size larger valve than would otherwise be required. It is considered good practice to increase the size of valve for a first floor radiator at the end of a main if it is the last radiator connected to the system.

As we have suggested the valve sizes for radiators used with an accelerated system are smaller than are required for an open tank system. For accelerated systems, such as the Honeywell and similar systems, valve sizes are as follows:

For radiators located on the first floor:

25 sq. ft. or less	½-inch valve.
25 to 50 sq. ft.	¾-inch valve.
50 to 125 sq. ft.	1-inch valve.

For radiators located on second floor:

30 sq. ft. or less	½-inch valve.
30 to 125 sq. ft.	¾-inch valve.
125 sq. ft. or larger	1-inch valve.

For radiators located on third (or upper) floor:

40 sq. ft. or less	½-inch valve.
Over 40 sq. ft.	¾-inch valve.

For either an open tank or accelerated system it is considered good practice to end the main at the connection to a first floor radiator and that this connection should be made with a reducing elbow immediately under the vertical upright to the valve. The main up to this point should be two pipe sizes larger than the radiator connection.

The branches should be the same size as the upright connection to the valve except when the branch is of unusual length or when it supplies a riser as well as a first floor radiator. The position of the radiator to be supplied determines the method of connecting the branch from the main. The old method, formerly used with open tank systems, was to connect the flow branches from the top of the main and the return branches into the side of the return main. The newer and better method is that recommended for accelerated systems. For systems of this character there are three styles of branch connections used. These are known as the "A," "B" and "D" connections and are illustrated by Fig. 1. The "A" style is used in connecting a branch supplying a first floor radiator or a branch supplying a first floor radiator and a riser. This connection is used only at points where there is no reduction in the size of the main.

When the main is to be reduced in size at the point where the branch is taken off, the "B" style of connection is used, otherwise the reduction would allow air to collect in the pocket formed by the reduction. Air pockets seriously interfere with the circulation and by using the "B" connection the air collecting in the pocket is exhausted through the air valve of the radiator connected to the branch. When a large main supplies a branch main, the branch is taken off from the larger main with a "B" connection.

In hot water piping there is always a tendency for the circulation to quickly seek the highest point of the system. This fact is one reason why the "D" style of connection is used in connecting risers supplying radiators on upper floors. It will prevent short-circuiting and the blocking off of the circulation in the main return beyond the point of connection. The more that a tee is turned down the more the circulation through the side outlet is retarded and the "D" connection prevents the branch from robbing the circulation to the radiators connected at a greater distance from the boiler. The robbing of the circulation in this manner is one of the bad conditions that ruins the circulation of many hot water systems and prevents an even circulation or the "balancing" of the job. If the first branches supplied get all of the hot water generated, there can be no circulation to the radiators connected at the far end of the main and there will be a gradual weakening of the circulation as the distance from the boiler is increased. Perhaps Fig. 2 will illustrate and make this condition better appreciated. The first of the heated water flows along the top of the main, and in every job there is always a slight difference in temperature between the water at the top and that at the bottom of the pipe. For this reason a connection to a first floor radiator, when located at a point quite near the boiler, should be made in such a manner as to retard the flow through it. This may be done by employing the "D" connection in taking off the branch.

Fig. 3 illustrates the sketch submitted by correspondent, who asks information regarding riser connections and the connections from riser to radiators for upper floors. The method of piping shown is very good. The risers to upper floors should not run straight up from the basement. As shown, the radiators on a lower floor are favored by being connected from the top of the riser and the risers continuing to upper floors are connected from the side of the risers leading to the lower radiator.

There are some definite rules to be followed as to the manner of making the connections from risers to the radiators. When two radiators of unequal size and located on the same floor are to be supplied from the same riser the smaller radiator should be connected from the side of the riser and the larger radiator from the top of it. This method tends to equalize the circulation to each radiator. Should both radiators be of equal size the circulation is equalized by reducing the size of the top connection. Fig. 4 illustrates the former condition and Fig. 5 the latter condition.

Having considered the importance of using the right size of valves and methods of connecting the branches supplying radiators and risers, we shall aim to illustrate how easy it is to determine the proper sizes in plotting or laying out a hot water main and how important it is that each style of connection should be indicated. The turning of a tee up or down is an important matter. Fig. 6 illustrates the flow of water through a branch with the outlet of the tee in several positions. If the top connection marked "A" or the 45 degree connection marked

."B" is used, either connection will appropriate the circulation down to the dotted line "D." In case the tee is turned to the side and the "A" or side style of connection shown in Fig. 1 is employed, the water in the main must be heated below the dotted line marked "E" before there will be any circulation through the branch.

The ease with which a system may be plotted is indicated by Fig. 7 and needs no extended description. Use the first floor plan of the building, if it is to be had, and on it mark in the piping as it would appear in the basement. The first floor plan is used as the piping to the radiators on this floor should be plotted before the risers are considered. Having provided for the first floor radiators mark in the branches to the risers, taking the branch singly from the main, if required, or connecting from the branch to a first floor radiator, if more convenient. No consideration of pipe sizes or of the various styles of

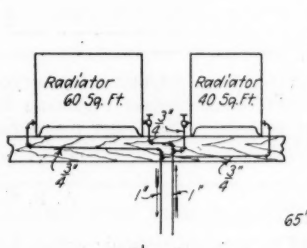


Fig. 4

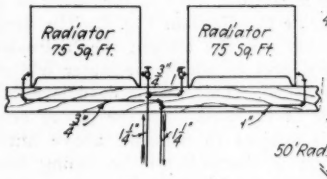


Fig. 5

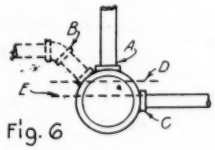


Fig. 6

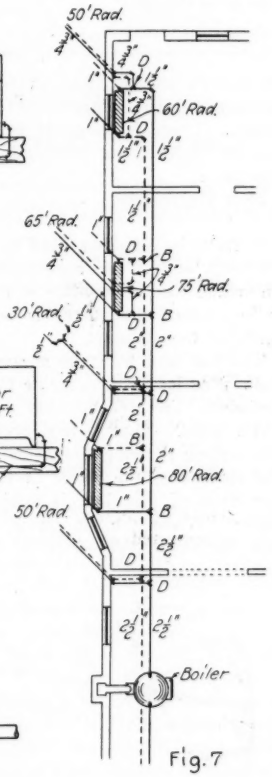


Fig. 7

connections has thus far been made. Let solid lines indicate flow pipes and dotted lines the returns. Mark the uptakes to the first floor radiators and the risers leading to the upper floor on an angle that they may be easily distinguished.

Fig. 7 shows the main leading towards the rear of the building. We have assumed that seven radiators aggregating 410 sq. ft. of radiation are supplied by this main, three radiators on the first floor and four radiators on the second floor. Valve and pipe areas may be determined by using circle areas as a basis for figuring, and if the fitter is not so familiar with these figures as to easily recall them by memory it is best to take a card or a scratch pad and list them as follows:

½-inch — .20 sq. inches.
¾-inch — .44 sq. inches.
1-inch — .78 sq. inches.
1¼-inch — 1.22 sq. inches.
1½-inch — 1.76 sq. inches.
2-inch — 3.14 sq. inches.
2½-inch — 4.90 sq. inches.
3-inch — 7.06 sq. inches.

Let us assume that this is an accelerated job requiring smaller piping than an open tank system. Having drawn the piping layout, begin at the extreme end of the main to mark in the pipe sizes and character of connections. A 1-inch pipe supplies the last first floor radiator connected (60 sq. ft.), therefore the main at this point should be 1½-inch, or two pipe sizes larger than the radiator connection. The riser connection to the rear radiator on the second floor (50 sq. ft.), should be ¾-inch, and a "D" connection should be used. The valve area now supplied is 1-inch, .78 sq. in., and ¾-inch supplying the second floor radiator, .44 sq. inch, or a total of 1.22 sq. inches. As the 1½-inch main has an area of 1.76 sq. inches, it is ample in size to supply both connections and it should be so marked. The next connection, working towards the boiler, supplies a branch which feeds a first floor radiator (75 sq. ft.), and a riser to a second floor radiator (65 sq. ft.). The former should have a 1-inch connection and the latter a ¾-inch connection. The valve area now supplied is .78+.44+.78+.44 or a total of 2.44 sq. inches, showing that a 1½-inch pipe is insufficient for the work and that a 2-inch main is required. This fact determines that character of the branch connection. As a reduction in the main occurs here, a "B" connection should be used. The riser connection from the branch should be a "D" connection as it supplies an upper floor radiator. Again working towards the boiler, the next connection is to a riser, ¾-inch, supplying a second floor radiator with a ½-inch valve, area .20 sq. inch, 2.44+.20= 2.64. The area of a 2-inch pipe is 3.14 which shows that there need be no enlargement of the main at this point. Continue working towards the boiler in this manner and it will be found that a 2½-inch main is ample to supply the radiators connected.

This method of sizing a main is simple and accurate. It is so easily applied that anyone can use it and there can be no question as to the results obtained. If the regular building plans are not available it is a simple matter to make a quickly drawn pencil plan showing the location of the rooms and radiators. This plan need not necessarily be drawn to a scale.

The United States in 1920 produced 63.8 per cent of the total world's production of petroleum. Since the commercial beginning of petroleum production in 1857, the United States has supplied 62.1 per cent of all oil produced. Ranking second to the United States in petroleum production in 1920 was Mexico, which country produced 23.5 per cent of the total world production in 1920, but its percentage of the total volume produced since 1857 was only 6.1 per cent, due to the fact that her commercial production dates back only to 1906.

Fifty-five out of 66 varieties of vitrified paving brick were eliminated by mutual consent of manufacturers and users at a conference held at the Department of Commerce at the call of Secretary Hoover. This conference is the first of a series which are planned by the Department of Commerce to bring together producers and consumers of important commodities for the purpose of effecting, by mutual agreement, simplification of variety and standardization as the practical method of eliminating waste in industry caused by needless varieties.

Sacramento is enjoying rather an extensive building boom, the major part of which is represented by expansion and additions of the state buildings. Another item in the program is the announcement of a new packing plant to be erected for the next fruit season by the California Packing Corporation. This amounts to an investment of about $800,000. The new plant will be operated on a nine or ten months' basis. Between 600 and 750 persons will be employed during the peak of the canning season.

QUESTIONS & ANSWERS

This department is a clearing house for ideas and is open to every reader of "Domestic Engineering." Problems sent in are replied to at the earliest possible moment by "Domestic Engineering," and this department can be made more valuable if readers themselves will help the man who needs assistance. Read the questions and answers. If you have had similar problems, or know from experience how the faults can be remedied, do not hesitate to send in your comment or criticism. It will be some satisfaction to you to know that you have helped a fellow craftsman and a pleasure for us to pass on the data. "Every man owes some of his time to the upbuilding of the profession to which he belongs."

SANITARY BOARD EVIDENTLY NOT WELL POSTED ABOUT SEPTIC TANKS.

Editor, "Domestic Engineering":—We have a new sewer system in our city. The sewage is conveyed by this system, from each building to an Imhoff septic tank. We have city water which is good water and seems very potable. It comes from a well about 200 ft. deep, which is the average for this locality. The city water is used for domestic purposes almost all over the town. But there are about four instances where people are using their own water systems supplied from their own wells on their own properties. The wells are about the same depth and the water seems to be about the same kind of water. Now then, the members of the sanitary board, who are good citizens, but who evidently know nothing of septic tanks and sewage disposal, claim that water coming in from different wells causes the septic tank to work poorly and not take care of the sewage as it is supposed to do.

I would appreciate an answer in detail on this subject, and please allow me to thank you in advance.

Florida. B. T. M.

We are inclined to think that your sanitary board is "bluffing." We do not see how there can be sufficient difference in the water supplied from these various wells to cause any defect in the bacterial action of a well designed Imhoff septic tank. We do not know of a single case on record where such a thing has happened. We do know, however, that hospital wastes, and factory wastes, etc., which may contain acids or disinfectants, can and sometimes do, destroy the bacterial action which is so essential to a proper operation of septic tanks. We are sure that your sanitary board cannot prove its assertion that the water from the private wells is a detriment to the proper action of the tanks.

CAUSE OF WATER FAILING TO SIPHON OUT OF ARTESIAN WELL.

Editor, "Domestic Engineering":—Fig. 1 is a sketch of a piping job I have installed, and I would like to know why I can not make the water siphon by using a 3-inch suction pump to start same. I can get water while pumping but same will not siphon. Sketch shows artesian well 63 ft. deep from top of casing. Pipe enters well 2 ft. 6 inches from top of casing. Pipe in well is 1½-inch galvanized steel, and has intermediate valve 50 ft. down. Below valve is a strainer. Below strainer the pipe extends to bottom of well and serves as a rest. The pipe runs 100 ft., being 1½ inch, and balance of distance to valves is about 850 ft. of 1¼ inch pipe. I close valves and then use suction pump but results are as stated above. I would like to know your opinion and any suggestions you may make regarding this outlay. There is about 40 ft. head. The water has always run all right from the well where 1½-inch and 1¼-inch pipe join.

New Hampshire. A. B. G.

If there is sufficient head to produce siphonic action from the well, and if the water fails to continue siphoning after siphonage has been fairly started with the pump, it appears quite evident that there is an air leak in the line, which "breaks" the siphon.

This air leak must be above the level of the water in the well. For instance, examine the diagram Fig. 2. The dotted horizontal line shows what may be termed the hydrostatic water level. That is the level to which the water will rise when none is being drawn off. This line is dead level with the surface of the water in the well. All the piping below the level of this line is subject to pressure above atmosphere. When the siphon is charged, all the piping above this line, as indicated at A, is under vacuum pressure, or

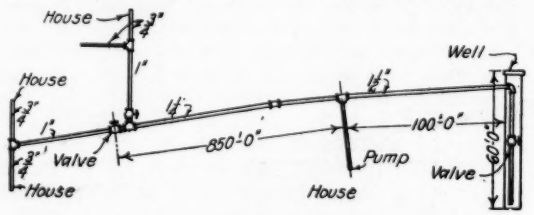


Fig. 1.

pressure lower than that of the atmosphere. Therefore, if there is a small leak, no matter how small, the air will leak into the pipe A, and stop siphonic action.

There is, however, a chance of the air leak being in the 1½-inch supply line lower than the hydrostatic water level.

There is another imaginary level that must be considered. That is the dynamic level, which includes the space B. When water is being drawn off at the faucets, there is a tendency to "drag" water down this part of the line. Its pressure also will be partial vacuum when water is being drawn. Therefore, it also must be perfectly air tight as well as A. Any leak below the dynamic line cannot leak air in. It can only allow water to leak out. Therefore, it is quite clear that in order to find the leak you must hunt from the well down the line.

We suggest that you apply an air pressure to the line. Test all piping and joints above water in the well first. If the leak is not there, then dig up and test the line from the well down until you find the leak. Test the piping with air

as you would gas piping using soapy water to detect the air leaks by bubbles.

Remember, the line above the dynamic level must be absolutely air-tight. We trust the above suggestions will help you. We are sure it is the best procedure under the

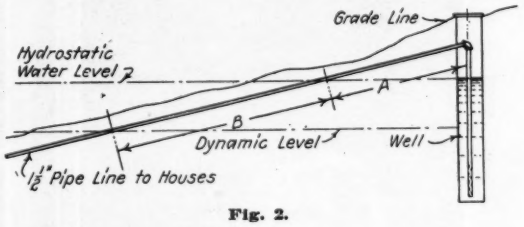


Fig. 2.

circumstances, providing the water level of well has not fallen below 25 ft. of the pipe line.

The National Trade Extension Bureau

TAKING THE PUBLIC INTO YOUR CONFIDENCE.

An Advertisement on the Cost of Doing Business, Planned for the Use of Associations or Groups of Plumbing and Heating Dealers.

UNDER the heading, "Is Your Plumber a Robber?" the Trade Extension Bureau has prepared an advertisement which contractors can, with little expense, by pooling their interests, run in their local newspapers to the advantage of all concerned. This advertisement will educate the public to understand the meaning of that mysterious word, "Overhead."

The public generally is under the impression that plumbing and heating dealers are soulless profiteers; that they charge excessive prices for labor; that they make enormous profits. We know this is not true, but the buying public will not know it until it is educated to know. If nothing is done to give the public the truth, people will go on believing the old hoary-headed jokes about the rich and robbing plumbers.

It is a business fact, that before a profit can be made on any transaction, it must provide for and pay the overhead cost of doing business. Therefore, the advertisement gives in the following detail the average fixed charge, or operating cost, for one year in a shop doing a volume of business of $25,000:

Misc. Office Expense (Sundries)	$ 25
Local License Fee	5
Telephone and Telegraph	125
Light, Heat, Power and Water	60
Stationery, Printing and Postage	85
Trade Papers, Business Magazines	5
Traveling Expense (Conventions, Soliciting Buying)	125
Office Salaries (Owner)	1,800
Bookkeeper, Typist, etc	1,400
Auto Expense (Supt. and Owner's Business Cars)	400
Truck or Wagon Expense (Including driver, where charges are made for such service per trip)	406
Depreciation of Wagons, Autos and Trucks	200
Insurance (On Horses or Truck, where charges are made for such services per trip)	15
Advertising and Donations	325
Dues (Associated Plumbers and Steam Fitters)	50
Dues (Chamber of Commerce or other Civic Body)	25
Interest on Owner's Capital	155
Interest on Borrowed Money	105
Legal Expense	15
Taxes (City, State and County)	70
Miscellaneous Store Expense	12
Allowances and Bad Accounts	125
Non-Productive Labor (Labor not chargeable)	25
Fire Insurance	19
Liability Insurance	184
Business Insurance	125
Rent (Shop and Warehouse, Garage and Yard)	600
Depreciation (Stock, Equipment and Buildings)	100
Damaged Material	12
Tools (Repairs and Depreciation)	50
Workman's Compensation Insurance (Based on Journeyman at $9.00 per day)	122
Miscellaneous Shop Expense	13
Total of Fixed Charge or Operating Cost	$6,783

Statement of Distribution of $25,000 Year's Volume.

Cost of Labor and Material	$15,944
Overhead (Fixed Charge or Operating Cost)	6,783
Total Cost of Doing Business	$22,727
Net Profit	2,273
Total	$25,000

As to the oft-repeated statement that plumbing and heating dealers charge excessive prices for labor, the Bureau suggests that the advertisement carry the following figures. The blank spaces should be filled in with the exact rate of wages paid in the town where the advertisement is used.

The average wage rate paid to journeymen plumbers during the last year has been $..... per hour.

The ruling rate for resale to the customer for this labor service has been $..... per hour.

Under present business conditions, the Plumbing and Heating Dealer actually loses money on this $..... labor when he resells it at $..... per hour, unless material in quantity is sold along with the labor, because of the fact that overhead cost of doing business must be provided for.

This is clearly proved by the following simple example, based upon the business facts and figures for a shop doing a volume of $25,000 worth of business per year with an overhead of $6,783.

Example.

Assume that the first six months of the year is gone, and that no work requiring material remains to be done:

There still remains to be provided for one-half of the year's overhead or $3,390.

This overhead is a fixed charge, and under the conditions as stated must be paid out of the proceeds of labor only:

A shop doing no more than $25,000 annual volume of business could not possibly work more than an average of three journeymen:

There remains of the year only 150 working days of eight hours each, or 1,200 hours:

Three men working 1,200 hours is 3,600 hours of wages. 3,600 hours, at $..... per hour, cost $..... for wages alone. $..... wages, plus $3,390 overhead, equals $.....

Dividing $..... by 3,600 hours, it is found that each of these hours of labor service must be resold for $..... before actual cost of doing business is covered.

$..... per hour, for labor service alone, loses for the Plumbing and Heating Dealer ..... cents on every hour sold, unless material is also sold in quantity to take up this heavy overhead.

According to the foregoing figures it will be seen that the proprietor, after allowing himself a salary less than the amount he pays his journeymen, has a net profit on a total year's business of $2,273, or only a net 10 per cent on the actual cost of his service.

Any man who knows anything about business knows that a net profit of 10 per cent is not profiteering. In fact, 10 per cent on a volume of business aggregating $25,000 is a very modest profit.

Late News from Idaho.

D. L. Crain, Nampa, plans the erection of an apartment building in that city, 40x70 ft., to contain 12 apartments of two rooms each. The structure will cost approximately $25,000.

The School Board of Coeur D'Alene is considering plans submitted by a number of architects in Spokane and Lewiston for the proposed new school building to cost $200,000. The structure will contain approximately 20 rooms, besides domestic science and manual training quarters, an auditorium and a gymnasium.

Patented and
Patents Pending

The Mueller Combination Sink Faucet

LESSENS KITCHEN DRUDGERY

A ***single spout*** gives hot, cold or tempered water. Now push the button and you get hot, cold or tempered water through a ***permanently*** attached hose spray.

The *MUELLER* Combination offers a variety of means for overcoming present distasteful features of sink work.

You can wash the hands in running water tempered just to suit—rinse the dishes in scalding water—clean spinach, lettuce or other vegetables with cold water—it is instantly ready for any use—it shortens the time required for any sink work and lessens the drudgery of the most disliked of all kitchen duties.

Any plumber can install the *MUELLER* Combination Sink Faucet No. 3025 on your sink. It will give you years of dependable service.

See your plumber today and write us for interesting plumbing literature.

H. MUELLER MFG. CO., Decatur, Illinois, U. S. A.

145 W. 30th Street, New York 635 Mission Street, San Francisco

Sarnia, Ontario, Canada

How MUELLER Helps Plumbers Sell Goods

The advertisement on the opposite page appeared in "Good Housekeeping" — the great women's magazine—where several million women saw it. Many of these women are or should be your customers.

The MUELLER Sink Combination, E-3025 is a splendid article to demonstrate and sells easily—because women like it and want it. It also makes an ideal Christmas Gift.

Try Selling E-3025 as a Christmas Gift

Last year several progressive plumbers made big extra money in December by pushing this fixture—MUELLER E-3025 – as a Christmas Gift, from father to mother, from husband to wife.

You can do the same thing—and every order is *new business* – just so much extra profit you wouldn't have made otherwise.

For real selling helps – sales plans and advertising matter – write us today.

H. MUELLER MFG. COMPANY, DECATUR, ILLINOIS
PHONE BELL 153
Water, Plumbing and Gas Brass Goods and Tools
New York City, 145 W. 30th St. Phone Watkins 5397
San Francisco, 635 Mission St. Phone Sutter 3577
Sarnia, Ontario, Canada
Mueller Metals Co., Port Huron, Mich., Makers of "Red Tip" Brass Rod; Brass and Copper Tubing; Forgings and Castings in Brass, Bronze and Aluminum; Die Castings in White Metal and Aluminum; also Screw Machined Products.

ENFORCEMENT *of* HEALTH *and* PLUMBING REGULATIONS

By John Fowler, Jacksonville, Fla.

THE first duty of a government should be to guard the health of its people. Therefore public health officials are necessary if sanitary measures are to be enforced, for the reason that careless and ignorant citizens must be compelled to obey health laws so that they will not be a source of danger to those who willingly comply with the same. Only those persons who are especially fitted by proper training should be employed to enforce health and plumbing regulations, which are promulgated for the purpose of preventing, as far as may be possible, all preventable diseases, and it is a demonstrable fact that the stricter the enforcement of the rules the less disease there will be in that community. The people who are responsible for the enforcement of health laws are generally called sanitary inspectors, which word is from the Latin word, sanitas, meaning health or whole, also we have the word sane, meaning sound of mind, so, as stated before, they, the inspectors, should be sound of mind as to the matters which they h to pass on regarding the public health.

Perhaps the most important health measure to be enforced is that pertaining to the proper disposal of human waste prevent the spread of the germs of intestinal disease, for it must be remembered that every one of the hundreds of thousands of cases of intestinal diseases that occur yearly, such as typhoid fever, cholera, dysentery, diarrhea and hookworm, are caused by germs that have escaped from the human body, and as it has now been discovered that persons who are not themselves ill, they yet may carry in their body the different disease germs and so pass them on to persons of less resistance. Therefore, it is evident that no wastes from the human body should, under any circumstances, be allowed to pollute the soil about the house where flies may have access thereto. The danger can be avoided to a large extent by making privies fly-proof by screening.

A remarkable showing resulted from a strict enforcement of a specific law. In the year 1910 the writer attended a meeting of the American Society of Sanitary Engineering in the city of Trenton, N. J., when the matter of typhoid fever was discussed in relation to flies. Upon returning to Jacksonville he consulted with the health officer and drafted an ordinance compelling all owners of earth toilets to make them fly-proof. The law was passed on and put into effect at the beginning of 1911. At that time there were about 8,500 earth toilets in the city. Within two years about one thousand were replaced with water closets due to extensions of sewers. About 500 new earth toilets were constructed making about 8,000 that were screened. The death rate from typhoid fever was, in 1910, 106.3 per 100,000; in 1913, 32.7 per 100,000.

Plumbing regulations are devised to regulate the proper installation of modern plumbing which consists of a system of piping and fixtures arranged to conduct a supply of water into a building and to conduct the waste products from the said building. The larger the number of fixtures used the more complicated the piping system, therefore a greater fouling surface. Sewer air being very deleterious to human life it is imperative that it be kept out of the houses. This can be successfully done by trapping, but it is not safe unless the traps are protected from syphonage by a proper arrangement of vent pipes, because when a trap is syphoned out then the sewer air has a clear passage into the house. This air breathed by a person, will, sooner or later, result in a doctor's visit and probably more serious results.

It is also essential that buildings be well ventilated for we must have air. We can live a considerable time without food but deprive us of air for a few minutes and we cease to exist. It is not enough that we have air—we must have fresh air. A full grown man takes into his lungs more than a pint of air each time he breathes and when at rest he makes about eighteen respirations a minute or over three thousand gallons a day. It is estimated that one hundred and fifty grains by weight of carbonic acid gas are added to the air of a bedroom in one hour by a single sleeper, more than one thousand during the night and unless there is provision for proper ventilation to dilute this properly his health must be seriously undermined. This being so it indicates there should be careful inspection of all plumbing within a building so as to not bring a surplus of foul air from defective plumbing into a room in which air is already contaminated.

Three Men who are Prominent in the Enforcement of Health and Plumbing Regulations in Jacksonville, Fla. They are, from left to right: C. O. Langston, Duval County Plumbing Inspector; John Fowler, Building Commissioner and Plumbing Inspector of Jacksonville, and John A. Walker, Assistant Plumbing Inspector of Jacksonville.

Another question should receive the attention of health boards more than it does, and that is the enforcement of the installation of bathtubs and the use of same. Experiments have been made to determine the amount of perspirable matter which passes off by the skin, and the conclusion reached is that about two-thirds of the drink and food taken into the human system is eliminated from it through the medium of the skin, while the remaining third passes off by the bowels, lungs and kidneys. There is a great necessity for keeping the skin clean, for cleanliness is next to godliness, we have been told. If the natural exudations are not kept properly washed off, they are and must be re-absorbed and taken into the system.

Inspectors should also pay attention to the foul condition of toilet bowls which some people allow to exist, because

while it may not be probable, still it is possible for the intestinal diseases before mentioned to be transferred from a contaminated bowl to some other person. Many people become angry when required to clean up their premises and repair defective plumbing so that they will not become a menace and a nuisance, and try to injure the inspectors' character and hinder their work, but the real helpful citizen is one who cheerfully complies with all orders of the health officials and not only that but will consider it his duty to report to the proper officers any inspector who may be lazy or careless in his work.

Another very important subject that is not given the attention it should have is the enforcement of regulations for the prevention of the propagation of mosquitoes. It is known that at least four diseases are transmitted by mosquitoes, malaria, yellow and dengus fevers and elephantiasis and probably others not yet identified. Mosquitoes must have water to breed in, therefore inspectors should be on the lookout for rain barrels, tin cans in out-of-the-way places containing water because invariably they will be found to have wiggle tails, and the inspectors should empty them no matter if they do offend the occupant of the property, because if wigglers are thrown on the ground they die and therefore cannot pass into the mosquito to complete the cycle.

A further prolific source of mosquitoes is sagging roof gutters and low places in valleys because even when there is no rain for a long period there is enough dew to keep small pools in defective gutters, and being out of sight are more easily overlooked. Also conductor pipes and rain water drains can be made a source of supply by careless plumbers running same with sags in them. Inspectors should see that all of this class of work is put in so that it will drain dry. We see that the work of the plumber is so interwoven with that of the Health Officer for the preservation of public health that it really becomes part of the same, and there should be more education along these lines in the plumbing profession.

A NEW FIELD OPENING UP FOR PLUMBERS.

By Robert Falconer.

ON FRIDAY evening, October 14, 1921, something happened in Boston, Mass., that could hardly have happened five or six years ago. On that night a hundred gas men got together at a dinner. There were a couple of speeches and one of the speakers advocated co-operation with plumbers and dealers in the sale of gas appliances.

Some of the more broad-minded gas men, those of greater vision have been advocating this for some time. In most cases, however, their hands have been tied and they have not been able to put their plans into action even in their own companies.

In the days before the war whenever a considerable number of gas men were gathered together and the suggestion was made that the gas company should encourage the plumber to sell appliances there were men present who did not hesitate to show that it was not good policy to co-operate with the plumber. It was claimed that the gas company should sell its own appliances and in that way absolutely control the sale. When it sold appliances under conditions that prevented any one else selling them, the company not only controlled the quality of the appliances sold but also the make.

Before the war some gas companies would not allow an appliance manufacturer to sell any appliances in its territory that the gas company itself did not sell. For example, if the company sold the water heaters manufactured by a certain concern but did not sell the gas range, it would not permit the manufacturer to sell any gas ranges there. If the manufacturer did make such an attempt the gas company ceased buying water heaters from him.

At first sight it would seem that the manufacturers would not stand for such methods. A better understanding of the conditions, however, reveals the fact that on the whole the system worked out very satisfactorily to the manufacturers.

The gas companies carried a good deal of the expense that the manufacturers would have to carry if an attempt was made at wide distribution. In the first place the gas companies bought appliances in large quantities and paid for them long before they were sold. There are gas companies today that have in their stock rooms appliances that they bought and paid for two years or more ago. In addition when the manufacturers do business with the gas companies they lose practically no accounts. One manufacturer has said that in ten years he has not lost a cent in a certain section of the country. Probably this manufacturer has not met with a single loss anywhere in the country.

The gas companies have also paid for practically all the expense of selling. The manufacturer, of course, must maintain a sales force and prepare a limited amount of advertising material but he is not called upon to do the national advertising that he would have to do if he was seeking a thorough national distribution. Only the companies manufacturing water heaters and selling these through plumbers have advertised nationally to any great extent. Manufacturers of appliances handled exclusively by the gas companies don't have to advertise nationally. In fact it would not pay them to do so because they have no control over their distribution. The gas companies control this.

All this means that in the past manufacturers have been able to do business on a smaller capital than would otherwise be the case. To be sure their growth has been limited, but on the other hand they have been doing a safe and sure business. They have always been able to count on a given profit each year.

The conditions brought about by the war have changed the attitude of the gas companies to a very great extent. Today there are a great many companies that have not the money with which to buy appliances as freely as they did before the war. The high cost of doing business is also making it necessary to make each department show a profit and the practice of selling appliances at less than cost is not as popular as it once was.

The manufacturers are finding that it is hard to move the appliances from their warehouses to the gas companies because the gas companies do not want to spend the money. Some gas companies are demanding that the manufacturer furnish the appliances on a pay as you sell basis, that is that they do more in respect to financing the selling than they have done in the past. The gas companies are more inclined than previously to require the manufacturers to treat gas companies in the same manner that manufacturers in other lines treat dealers.

The more insistent this demand becomes the more certain the manufacturers are going to insist upon a freer distribution of appliances. This means that the gas appliance field is going to be opened up to the plumber.

There is another feature that is also causing the gas companies to seek co-operation with plumbers and dealers. Before the war, the price of gas per hundred ft. averaged to be about the rate per kilowatt hour for electricity. Gas has increased in cost at a much more rapid rate than electricity with the result that now electricity offers more serious competition than it ever did before.

Everybody sells electric appliances. In addition to the electrical dealers, there are department stores, hardware stores, furniture stores, drug stores and many other kinds of stores selling some kind of electrical appliances. We even find plumbers entering the electrical field. The result is that everybody is boosting electricity while they are inclined to knock gas.

The gas companies are beginning to realize this. In fact at that meeting in Boston a number of gas men stated that they were co-operating with merchants and that they were

throwing business their way. Gas companies are finding it more and more necessary to do this.

The companies in the smaller cities are those which are tending this way to the greatest extent. Those in the larger cities are not in the same position as the smaller companies, and it is probable that they will be the last to extend full co-operation to the plumber.

In the past any attempt at co-operation between the plumber and the gas company has not been very satisfactory. This has been due in no small measure to the fact that neither the gas company nor the gas appliance manufacturer saw any great need for this co-operation. The tendency was to take the attitude that aid was being extended to the plumber and his help was not needed. In some cases this attitude was taken unconsciously and unintentionally. Nevertheless it was this attitude that caused any attempts at co-operation to fail. The gas company really was not co-operating, no matter how sure it might feel that it was. There can be no co-operation until each party feels the need of the help that the other can give.

Gas companies are now coming to a point where they realize that they need help in the sale of appliances. No farther back than 1914 electric light companies were wavering between the policy of selling electric appliances below cost and controlling appliance sales and co-operation with the other dealers in the community. There was in reality only one thing that caused them to adopt the policy of co-operation. That was the size and the strength of the manufacturers of electric appliances who saw the vital importance of the widest possible distribution of electric appliances.

The years that have passed since then have been an object lesson to the gas companies. It is driving them to a similar method of co-operation. Sooner or later they must come to it.

All electric light companies are not co-operating with electric contractors and dealers to a degree entirely satisfactory to these contractors and dealers, but in practically every community an independent dealer can make money handling electric appliances while in the past just as soon as a dealer built up a good business in gas appliances there was danger that the gas company would take steps to take the business away from him.

There is every indication that this will not be the case in the future. It surely will not be as soon as the manufacturers start to advertise nationally and gain a wide distribution because after these manufacturers gain this distribution they are going to fight for it and they will be fighting on the side of the plumber. There is every indication that it will pay the plumber to watch the attitude of the gas men towards the sale of gas appliances. During the coming years some plumbers are going to be able to do a very profitable business in these appliances.

November 30 and December 1, 2 and 3, 1921.—The twelfth annual convention of the National Association of Practical Refrigerating Engineers, at the Hotel Lorraine, Philadelphia, Pa.

January 24, 25 and 26, 1922.—The twenty-eighth annual meeting of the American Society of Heating and Ventilating Engineers, to be held in the Engineering Society's building, 29 West Thirty-ninth Street, New York City.

January 17 and 18, 1922.—The 28th annual convention of the Wisconsin Master Plumbers' Association, to be held in the Gold Room, Hotel Wisconsin, Milwaukee, Wis.

February 14, 15 and 16, 1921.—The annual convention of the Ohio State Association of Master Plumbers, at Canton, Ohio.

March 7, 8 and 9, 1922.—The annual convention of the State Association of Master Plumbers in North Dakota, at Grand Forks.

March 13, 14 and 15, 1922.—The annual convention of the Indiana Society of Sanitary Engineers to be held at Indianapolis.

March 27 and 28, 1922.—The annual convention of the Kansas Master Plumbers' Association, at Salina, Kansas.

April 18, 19 and 20, 1921.—The next annual convention of Iowa Master Plumbers' Association, in Mason City, Iowa.

Wisconsin Master Plumbers to Meet in Milwaukee.

The Wisconsin Master Plumbers' Association will hold its twenty-eighth annual convention on Tuesday and Wednesday, January 17 and 18, 1922, in the Gold Room of the Hotel Wisconsin, Milwaukee, Wis., according to official notice just issued by Secretary Jacob Zimmermann, of Milwaukee, Wis.

Iowa Master Plumbers to Meet in Mason City.

Iowa Master Plumbers' Association will hold its annual convention April 18th, 19th and 20th, 1922, in Mason City, Iowa. Heretofore this association has been holding its annual convention earlier in the season, but unfavorable weather conditions in former years have made it desirable to hold it later in the season, according to the official announcement just received from President John F. Garvey, of Mason City, Iowa.

The Board of Directors of the Kentucky State Association will meet in Louisville on December 5th. The date of the next annual convention of the organization will be decided upon at this meeting.

A. F. Pickert.

A. F. Pickert, president of the Pickert Plumbing Co., Atlanta, Ga., died at his home in that city Friday, November 18, following a long illness. Mr. Pickert was in the plumbing business in Atlanta for twelve years. He is survived by his widow and one son.

John Goodman.

John Goodman, who for the past 20 years has held the office of city plumbing inspector of Eureka, Calif., died November 7. Mr. Goodman was a native of Wales, but had spent most of his life in California. He was 51 years of age and left no family. He was in every respect an efficient member of the trade and was held in high esteem by those who knew him.

Robert E. Donaldson.

Robert E. Donaldson, one of the plumbers of early days in Seattle, Wash., died recently at the Swedish Hospital in that city, at the age of 51 years. Mr. Donaldson had lived in Seattle for 32 years, coming here after the big Seattle fire.

C. S. Hefferlin, Livingston, Mont., announces that he will erect a modern heating plant in that city, to cost something over $40,000.

Athens, Ga.—The Eberhart & Scott Co. will soon construct a large building at Washington and Lumpkin Streets in that city to cost between $50,000 and $75,000.

AMONG THE WHOLESALERS AND MANVFACTVRERS

COMPANIES RECENTLY INCORPORATED.

The Superior Fuel Saver Co., of Springfield, Mass., has been incorporated with a capital of $50,000 to manufacture heating specialties. The incorporators are: Charles F. Randall, Joseph T. Clark and James T. Smith, all of Springfield.

Graf Boiler Setting Co., Inc., of Worcester, Mass., has been incorporated with a capital of $25,000, to manufacture heating specialties. The incorporators are: Anton Graf, E. Emory and A. E. Graf, all of Worcester, Mass.

Taylor-Brown Mfg. Co., of Worcester, Mass., has been incorporated with a capital of $100,000, to manufacture plumbing specialties. The incorporators are: Walter B. Taylor, William H. Brown and Albert C. Moulton, all of Worcester, Mass.

The Mechanical Devices Company, 134 Fox Street, Aurora, Ill., has been incorporated with a capital of $25,000 to manufacture house service pumps and other mechanical devices. The officers of the company are: President, F. E. Sperry; vice-president, C. H. Greene; secretary and treasurer, C. S. Battles.

The Chicago Syphometer Mfg. Co., 64 West Randolph Street, Chicago, has been incorporated with a capital of $20,000 to manufacture plumbers and steamfitters specialties. The incorporators are Robert A. Brooks, Theodore Dicken and Andrew Morrison.

NEW BUILDING FOR NATIONAL LEAD COMPANY.

The National Lead Company, of New York City, with offices at 485 California Street, San Francisco, has awarded the contract to construct a three-story plant building at East Tenth Street and Forty-fifth Avenue in Oakland, Calif. The structure will cost approximately $50,000.

SANDS MFG. CO. PLANS NEW ADDITION.

The Sands Mfg. Co., 5407 Sweeney Avenue, Cleveland, Ohio, is having plans prepared for the construction of a one-story addition to its plant in that city. The new building will be 35x100 ft. and will be equipped as a forge shop. The structure is estimated to cost $40,000. J. M. Sands is president of the concern.

MOVES PORTION OF PLANT.

The M. W. Kellogg Co., Jersey City, N. J., has removed a portion of its plant from West Side Avenue to the new buildings now completed in the Droyers' Point section. Work on the other buildings under construction will be pushed to completion, and it is proposed to have the entire plant completed and in operation early in the spring.

TO REBUILD PLANT DESTROYED BY FIRE.

The Haynes-Langenberg Mfg. Co., St. Louis, Mo., is planning the reconstruction of a portion of its heating equipment manufacturing plant destroyed by fire November 6th, which caused a loss estimated at close to $100,000.

ROLLINS SUPPLY CO. VISITED BY FIRE.

The Rollins Supply Co., of 17 West Kinzie Street, Chicago, was one of the firms visited by fire on Wednesday morning, November 16. The loss, estimated at $15,000, was covered by insurance. The fire, which started in a leather goods company's section of the building, will cause no interruption in the business of the Rollins Company.

PURCHASE BUSINESS OF EUREKA SMOKELESS FURNACE CO.

The General Boilers Co., of Waukegan, Ill., has purchased the business of the Eureka Smokeless Furnace Co., of Chicago.

STARTS CONSTRUCTION OF ADDITION.

The Novelty Steam Boiler Works Company, Baltimore, Md., has started construction of a two-story addition to its plant at 917-929 South Howard Street, in that city. The new addition will be 110x155 ft.

ALLRIGHT MFG. CO. COMPLETES NEW PLANT.

The Allright Manufacturing Co., of Rural Hall, N. C., and Greensboro, N. C., has just completed the construction of a new plant in the latter city, which will enable the company to increase its output considerably.

NEW CONSTRUCTION WORK.

The following are among the most important contracts recently awarded, as reported by the "American Contractor":

$500,000 church, Detroit, Mich., North Woodward M. E. Church.

$250,000 school, Onondaga, New York, Board of Education.

$210,000 hospital, Centralia, Ill., St. Mary's Hospital.

$200,000 hospital, Wilkes-Barre, Pa., Wilkes-Barre City Hospital.

$200,000 apartment building, Chicago, Ill., Ford J. Mallman.

$200,000 armory, Danville, Ill., State of Illinois.

$165,000 residence, Lancaster, Pa., Chas. Green.

$150,000 auditorium, Wellington, Kansas, City of Wellington.

$150,000 bank building, Mahanoy City, Pa., Union National Bank.

$140,000 school, Bloomville, Ohio, Board of Education.

$125,000 church and Sunday school, Rochester, N. Y., Spencer-Ripley M. E. Church.

$100,000 church, Washington, D. C., St. Paul's Parish Church.

$100,000 apartment house, Norfolk, Va., Granby Park Syndicate.

$100,000 reformatory, Green Bay, Wis., State Board of Control.

$100,000 school, Lorain, Ohio, Nativity of Blessed Virgin Mary Church.

$2,000,000 hotel, Washington, D. C., Hamilton Corporation.

$2,000,000 hotel, Cincinnati, Ohio, The Gibson Hotel.

$959,700 school, Washington, D. C., District of Columbia.

$750,000 hospital, Leavenworth, Kansas, U. S. Government.

$500,000 Y. M. C. A. building, Columbus, Ohio, Y. M. C. A.

$400,000 school, Alliance, Ohio, Board of Education.

$300,000 factory and mercantile building, Chicago, Ill., Barrett & Barrett Mfg. Company.

$270,833 school, Portsmouth, Ohio, Board of Education.

$175,000 flat buildings, Chicago, Ill., Himelblau & Schecter.

$175,000 church, school and hall, Chicago, Ill., First Baptist Church.

$150,000 hotel, Middlesboro, Ky., The Cumberland Hotel.

$139,706 temple, Newport News, Va., Masonic Temple Corporation.

$135,000 apartment house, Milwaukee, Wis., owner's name withheld.

$125,000 shops, St. Louis, Mo., Missouri Pacific R. R.

$125,000 home, Youngstown, Ohio, Children of Israel.

Employees of Wolff Mfg. Co. Hold Reception and Dance.

The Wolff Athletic Club, which consists of employees of the Wolff Manufacturing Company, Chicago, held a most successful reception and dance at the Dreamland Ball Room, Chicago, Friday evening, November 18. More than five hundred employees and guests attended. Three exhibits of plumbing fixtures enclosed in a space 32 ft. wide, 7 ft. high and 7 ft. deep, were side attractions. Each exhibit represented different priced installations. There was the lower priced bathroom, the moderate priced bathroom

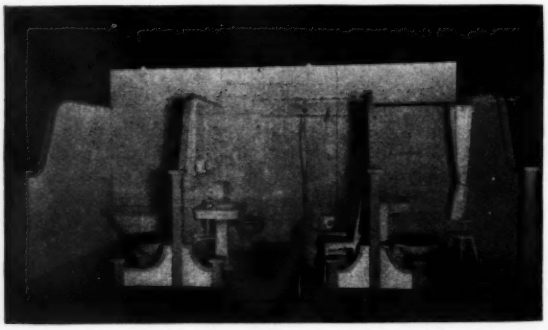


Exhibit of the Wolff Manufacturing Company's Products at "Dreamland" Dance Room, Chicago, Shown in Connection with an Entertainment by the Wolff Athletic Club, November 18th

and the high priced bathroom. The first two bathrooms contained a tub, pedestal lavatory and combination closet and tank, while the last bathroom was fitted up with pedestal lavatory, combination low down tank and closet and a built-in bathtub with overhead shower, which attracted much attention. Cases of brass goods manufactured by the company were also on display at each end of the bathroom exhibits. Officers of the company were present and enjoyed the hospitality of the Club. The annual dance of the Club will be held at the same place on Wednesday evening, February 22, 1922.

EXPANDS ANNEALING PLANT.

Crane Company, Chicago, has completed plans for the construction of a one-story addition to its plant on South Avenue, Bridgeport, Conn. The new structure will be 75x175 ft., and will be used for the most part for annealing operations.

BUSINESS AND FINANCIAL CONDITIONS IN THE UNITED STATES.

Extracts from the Last Monthly Business Survey Made by the Guaranty Trust Company, of New York.

Further revival of business has occurred in the last few weeks, but, of course, its immediate future is contingent upon developments in the railroad situation. Recent gains, however, have not in any sense assumed the proportions of a boom, but are not less gratifying on that account. Steady and sustained increase in activity is desired. In part the present volume of business reflects merely seasonal production and trade, but when allowance is made for this condition it appears that substantial progress is being made toward normal business activity, which should be realized if the foreign and domestic clouds on the horizon are cleared.

Tendency Toward Normal Relations.

This tendency of group prices to resume more nearly their pre-war relative positions represents an approach to conditions contributing to the revival of general business activity. The wide diversity in the movement of the market value of one commodity or service in comparison with the value of another, during and since the war, has greatly modified the distribution of the buying power of individuals, and of industrial groups. Business activity is being stimulated by those price movements which tend to restore an approximately normal distribution of the nation's buying power.

It is too early to predict with assurance a forthcoming stabilization of prices at approximately present levels, but the fact that in recent months in many other countries as well as in the United States there has been a noticeable tendency of general prices either to rise slightly or to remain comparativly unchanged supports the belief that any further changes in the immediate future should be comparatively slow.

The country's daily pig iron output, which in August for the first time since October, 1920, showed an increase compared with the production of the previous month, made a further gain in September. With 82 furnaces in blast on October 1, compared with 70 a month earlier, the output in the present month, it appears, should substantially exceed that in September. In the production of steel ingots, also, the increase for August was followed by a further increase in September. The production of this month was the largest since May.

The increase in the tonnage of unfilled orders of the Steel Corporation, as reported for September 30, representing the first monthly increase since July, 1920, is a further evidence of definitely better business for the iron and steel industry. Operations of the steel industry for the quarter ended September 30 of about 28 per cent. of capacity compared with about 31 per cent. for the quarter ended June 30 are thought to mark the low point. Operation at about 35 per cent. of capacity is expected for the present quarter.

Substantial Gains in Building Industry.

Contracts awarded in September reflect substantial gains in activity in the building industry. The aggregate of contracts in 27 northeastern states for the month, as reported by the F. W. Dodge Company, was $246,186,000, the largest monthly total in the current year and a record for September. This was 11½ per cent. in excess of the total for August. In the last ten years the average value of contracts for September was 14½ per cent. less than for August.

Commercial failures in September, according to Bradstreet's reports, were 5 per cent. fewer than in August. The decline in aggregate liabilities was much greater, being 24 per cent. Liabilities were the smallest total of any month since October, 1920.

The early reduction of railway rates is presaged by the steps in this direction already taken by the Executive Committee of the Association of Railway Executives and the

Interstate Commerce Commission. Apparently no horizontal percentage reduction is contemplated, but rather such readjustments downward of particular rates as will substantially reduce the average. The immediate effect of reductions on the earnings of the roads would doubtless be adverse. What may reasonably be expected is that the stimulus to business in general resulting from reduced transportation costs, especially for basic commodities and foodstuffs, would in the long run so increase the volume of the tonnage carried by the roads as to counterbalance the immediate loss of revenue.

Inter-Government Indebtedness.

An outstanding feature of international credit since the war is the large volume of inter-government indebtedness. After two centuries of foreign investment the British acquired a balance due them in 1914 from all parts of the world of about £4,000,000,000, nearly $20,000,000,000 at par of exchange. On these investments Great Britain realized, partly through transfer of ownership, about £1,000,000,000, during the war, which was used mainly in paying for American products.

Though Great Britain required many years to reach her pre-war credit position through private investment abroad, the United States in the last six years has built up foreign credits of all sorts in excess of $15,000,000,000. Of this amount, approximately $3,000,000,000 is in the hands of private investors in the form of various classes of foreign securities, while more than $10,000,000,000 is owed to our Government by other governments.

In approximate figures, at the parities of exchange, the principal inter-government debts are estimated as follows: Germany's reparation liabilities are about $32,000,000,000; France owes $2,700,000,000 on principal account to Great Britain and $3,350,000,000 to the United States, making a total of about $6,050,000,000; Italy owes to Great Britain $2,312,000,000, and to the United States $1,648,000,000, making a total of about $3,950,000,000, while Great Britain owes the United States more than $4,000,000,000.

The indebtedness of other governments to the Government of the United States is shown in the accompanying table, to which should be added approximately $1,000,000,000 of interest accrued and unpaid.

Indebtedness of Other Governments to the Government of the United States, June, 1921.

	Credits Granted Under Liberty Loan Acts	Surplus War Materials Sale	Food Relief	Grain Corporation	Total Obligations
Armenia	.....	.....	$8,028,412.15	$3,931,505.34	$11,959,917.49
Austria	.....	.....	.....	24,055,708.92	24,055,708.92
Belgium	$347,691,566.23	$27,588,581.14	.....	.....	375,280,147.37
Cuba	9,025,500.00	.....	.....	.....	9,025,500.00
Czechoslovakia	61,256,206.74	20,621,994.54	6,428,089.19	2,873,238.25	91,179,528.72
Esthonia	.....	12,213,377.88	1,785,767.72	.....	13,999,145.60
Finland	.....	.....	8,281,926.17	.....	8,281,926.17
France	2,950,762,938.19	400,000,000.00	.....	.....	3,350,762,938.19
Great Britain	4,166,318,358.44	.....	.....	.....	4,166,318,358.44
Greece	15,000,000.00	.....	.....	.....	15,000,000.00
Hungary	.....	.....	.....	1,685,835.61	1,685,835.61
Italy	1,648,034,050.90	.....	.....	.....	1,648,034,050.90
Latvia	.....	2,521,869.32	2,610,417.82	.....	5,132,287.14
Liberia	26,000.00	.....	.....	.....	26,000.00
Lithuania	.....	4,159,491.96	822,136.07	.....	4,981,628.03
Poland	.....	59,636,320.25	51,671,749.36	24,353,590.97	135,661,660.58
Rumania	23,205,819.52	12,922,675.42	.....	.....	36,128,494.94
Russia	187,729,750.00	406,082.30	4,465,465.07	.....	192,601,297.37
Serbia	26,175,139.22	24,978,020.99	.....	.....	51,153,160.21
Totals	$9,435,225,329.24	$565,048,413.80	$84,093,963.55	$56,899,879.09	$10,141,267,585.68

Novel Features of This Debt.

The proportion of government to private foreign credits in the foreign account of the United States is important, because the relationship of debtor and creditor between governments on such a scale is entirely novel. Debts of this magnitude, between nations, whether private or governmental, cannot be paid without affecting the industries, not only of the countries immediately concerned, but of others as well.

These debts between governments have not arisen in the usual course of trade; in general, they have not increased the productive power of the debtors, and the material bought with the funds has been destroyed. Furthermore, they are owed chiefly by countries which can pay usually only with manufactured goods or services to nations which are seeking outlets for similar commodities. Whereas formerly the United States, which continues to export great quantities of food and raw materials, was debtor to the European countries that purchased these commodities from her, she is now their creditor on governmental account to a vast amount.

The unusual features of this huge inter-governmental indebtedness, which is for the most part in the form of demand obligations, make negotiations for its refunding extremely delicate, but an informed public opinion regarding the nature of these debts, their amount, and the purpose for which they were contracted, is essential to success. The task will be difficult, and in accomplishing it, the economic relationship heretofore maintained between the trading nations will doubtless be seriously altered.

New International Trade Relationship.

A new relationship between debtor and creditor nations is in evidence throughout the world, and the effort to readjust trade and finance to the new conditions contribute in large measure to the economic depression of today. While this new relationship is doubtless temporary and in all probability will not outlast the readjustment which the trade of the world is undergoing, it throws great responsibility upon the United States and also provides a unique opportunity for establishing new trade connections.

In pre-war times the creditor nations had what is known as an unfavorable merchandise balance of trade, that is, they imported more commodities than they exported, while for debtor nations the reverse was usually the case. The industry of the creditor nations was more or less predominantly manufacturing and commercial, and the debtor nations were engaged principally in agriculture and the production of raw materials. During 1919 and 1920, however, while the old creditor nations maintained even larger unfavorable trade balances than formerly, the phenomenon occurred of a reversal of the normal favorable balances of most of the debtor nations. At the same time, the United States, which has become nominally the largest creditor in the world, found herself in the unusual position of having the largest excess of exports over imports in her history and, despite the decreased value of her foreign trade, this favorable balance continues in 1921, without appreciable diminution from that in 1920.

The excess of exports over imports for the United States by fiscal years ending June 30 was as follows: $4,130,000,000 in 1919; $2,870,000,000 in 1920; and $2,850,000,000 in 1921. The

figures for July, August and September, 1921, showing exports of $320,000,000, $375,000,000 and $325,000,000, respectively, against imports of $178,000,000, $194,000,000 and $180,000,000, leaving an excess of exports over imports of $142,000,000 in July, $181,000,000 in August, and $145,000,000 in September, indicate no great change in the balance of our foreign trade. Meanwhile, during the present year the foreign trade merchandise balance of France, formerly the second largest creditor nation, has turned in favor of that country, while other countries throughout the world, especially the creditor nations, are striving to limit their

(Continued on Page 423.)

B. A. Lewis, who has been connected with the American District Steam Co., of North Tonawanda, N. Y., for 19 years, has just resigned as advertising and sales manager for this concern, and plans to open a sales office in Buffalo, N. Y., January 1, 1922, specializing on heating equipment, including products of the American District Steam Co

Joseph B. Clark, of the Allright Manufacturing Co., Rural Hall, N. C., and Greensboro, N. C., was in Chicago this week. He reported business good and expressed the opinion that the next year would be one of the greatest years in nearly all lines of industry.

P. D. Cotter, manager of the plumbing department of the James Supply Co., of Chattanooga, Tenn., one of the veterans in the plumbing supply business in the South, has just returned to his desk, having fully recovered from an illness which necessitated an operation and a stay of several weeks' duration in a local hospital.

George Lee, manager of the plumbing supply department of the Empire Machinery and Supply Co., of Norfolk, Va., has just recovered from a serious illness which kept him away from his office for more than three weeks.

Robert Vessey, of the J. A. Cochrane Brass Manufacturing Co., of Cleveland, O., was in Chicago this week on a 5,000-mile business trip which will take him as far south as San Antonio, Texas.

TRADE LITERATURE

Kitchen Sink Folder.

Reproduced herewith is the front cover of an attractive advertising folder just issued by the United States Sanitary Mfg. Co., Pittsburgh, Pa. The folder is entitled "A Woman's Pride is Her Kitchen," and in carrying out this idea the company's complete line of double drain board all white kitchen sinks is illustrated and thoroughly described. The folder can be used for mailing purposes, especially as envelope stuffers.

The Minneapolis Heat Radiator Company, Minneapolis, Minn., has just issued a small folder which describes and illustrates the Minneapolis pressure regulator. This device is for use on steam or vapor heating plants to maintain any pressure.

Twenty Years Ago in "Domestic Engineering"

Saturday, November, 23, 1901.

Supply Man Married.—Charles R. Clow, second vice-president of James B. Clow & Sons, was married November 18 to Miss Hattie L. Barth.

Popular Man Gone.—Percy MacCallum, eastern manager and a director of The Powers Regulator Company, of Chicago, died November 21 at his home in Brooklyn, N. Y.

No Nearer Settlement.—This is the seventh week of the plumbers' strike at Denver, and a settlemnt sems no nearer than at the beginning.

Dead.—Alexander Fiddes, of Fiddes & Hogarth, is dead at his home in Toronto, Canada. Mr. Fiddes was popularly known as the father of the Canadian Plumbers' and Steamfitters' Association.

Plan Sewer System.—The water supply and sewer system for the forthcoming World's Fair at St. Louis is being planned.

Apprentices.—Sharon, Pa., plumbers demand that apprentices now employed be compelled to work four years before being allowed to handle tools.

Refuses Injunction.—Judge John A. Talty of the Circuit Court, St. Louis, has refused to issue an injunction restraining striking plumbers from picketing places of business. Recently, in Chicago, Judge Kohlsaat issued an order to prevent similar picketing.

Northern Plumbers Busy.—The plumbers of Winona, Minn., were never so busy. Since the completion of the second sewerage district of that city plumbers have been working day and night to keep up with orders.

First Board of Directors.—Frank P. Kelly, C. E. Boughton, William Liddell, W. H. Morland and V. W. Hadley compose the first board of the recently incorporated Master Plumbers' Association of Binghampton, N. Y.

Prices Remaining Firm.—The prices of plumbing supplies are still firm, and the prospects are that they will remain so for some time to come. There still seems to be a scarcity in plumbers' brass goods.

President Schwab Building Churches.—President Charles M. Schwab, of the Steel Trust, is making as good a record for himself in church circles as Andrew Carnegie is making in library circles. He recently gave $50,000 towards a $75,000 church at Braddock, Pa. This is the third church for which Mr. Schwab has furnished most of the money.

Enlarging Plant.—The United States Radiator Company has started work on additional buildings for their already large plant at Dunkirk, N. Y.

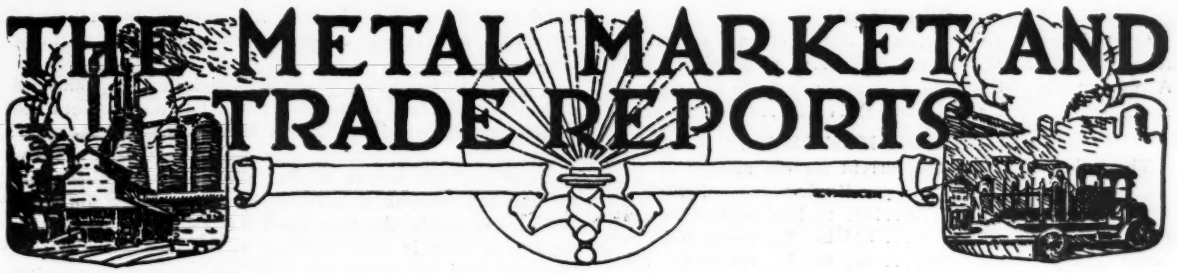
Incorporated.—The Redding Manufacturing Company, Camden, N. J., has been incorporated with a capital of $125,000 to manufacture cast iron pipe.

New England Building Eenterprises.—The estimated cost of new buildings projected during the past week throughout New England approximates $3,126,000, as against $4,301,000 during the corresponding week last year. But on the whole 1901 will be much better than 1900. The total to date this year amounts to $175,985,000, while for the same period of time last year the total was only $85,186,000, a difference of a little more than ninety million dollars.

Visiting.—C. M. Woolley, secretary of the American Radiator Company, with Mrs. Woolley, is visiting a brother in Colorado Springs.

Big Fire Loss.—The Brooklyn, N. Y. plant of the National Enameling and Stamping Company has been completely destroyed by fire. The loss is estimated at half a million dollars.

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

The steel industry is moving now into a period of less activity than characterized it for the past several weeks and the slow-up has resulted in bringing orders to within a few days of mill schedules, so that there is a race on among steel salesmen to keep the mills in operation. So far the operations have been fairly well sustained, but no one can say whether this condition will remain or whether there will be another revival of buying within a short time. Finishing mill schedules throughout the Pittsburgh district are holding at close to 60 per cent, which was the percentage of the last couple of weeks.

Heavier products are still weak and prices show no firming tendency in view of lack of demand. Among the lighter products sheets are scarcely holding their own, though tinplate is being inquired for by the larger can-makers for their 1922 requirements. All tinplate now moving is on the basis of $4.75 per base box.

The gains in pipe have been sufficient to increase operations at the principal mills in the Pittsburgh district, the leading interest taking on considerable new business. This interest is operating at about 75 per cent capacity. A good deal of merchant pipe is figuring in the current orders. Jobbers continue to replenish stocks on a substantial basis, and thus show general building operations are being maintained somewhat better than usual on a summer schedule.

Railroad business has taken a decided turn for the better. According to its executive head, the Baldwin Locomotive Works has increased its business materially. It has uncompleted orders equivalent to 40 per cent of capacity and will enter the new year at the same percentage. October was an exceptionally good month for locomotive building, the best since last May.

The number of inquiries for rails is also increasing. The New York Central is announced to be in the market for 200,000 tons, the New York and Western for 40,000 tons, the Philadelphia and Reading for 20,000 tons, and the Pennsylvania is expected to come in soon for probably 150,000 tons. A large tonnage of plates and shapes is expected to result from recent orders for new rolling stock and car repairs, particularly in the West.

One of the most significant developments in the iron market lately is the weakness in standard basic pig iron, which is generally quotable at $19, Pittsburgh, and would probably be sold for less. In fact some resale tonnage is reported to have moved at $18.50. Until several weeks ago steel works interests held out for $20. In view of this situation Trumbull Steel Company has deferred starting the new Trumbull-Cliffs blast furnace for the time being and is in the market for a round tonnage of pig iron. The big Trumbull furnace may not be started until next spring.

Demand is still confined to small lots, which are usually placed with a selling agent without competitive bidding and there are few inquiries. There is still little or no interest shown in steel making iron and the price is nominal in absence of business.

From Cincinnati the reports are favorable and business there is showing genuine signs of improvement, and consumers are covering requirements extending into next year.

The undertone as a whole is easy as selling pressure develops here and there, but the statistical position is sound, notwithstanding a higher rate of production, and a return to conditions approaching normal would materially change the complexion of the market. At present there is evidently a decided objection on the part of buyers to add to their inventories, so that the year is likely to open with stocks in foundry yards down to a minimum.

Coke has felt the stress of quiet demand and production has dropped off, and the price for prompt delivery has been shaded as low as $3 for furnace grades. Foundry coke is also in very light demand, and has been offered down to $4 at the ovens. The market ranges between $4 and $4.50 as to grade. Prices for pig iron are quoted as follows:

No. 2, Pittsburgh	$22.46@22.96
No. 2X, Philadelphia	22.84@23.54
No. 2, Southern, Birmingham	18.00@19.00
No. 2, Chicago	21.00@21.50
Basic Valley, Furnace	19.00@19.50
Bessemer, Pittsburgh	21.96@22.46

Copper.

There is a distinct improvement in copper and producers are more cheerful. Demand for both domestic and foreign account during the past few days has been particularly good. The most notable feature has been a general disposition to provide against future requirements, and considerable business is reported covering shipments over the entire first half of next year. Some of the leading producers have consistently maintained their unwillingness to quote beyond January, but it has leaked out that sales have been made in various positions extending as far ahead as June. The effect of this buying support has been to strengthen materially the hands of the sellers, and the market has been advancing, not suddenly or spasmodically but steadily ⅛ cent at a time, and the buyers, bidding under the market, have bought on an ascending scale. Sales by weak holders have been reported during the past week as low as 13.05 cents shipping point, but December metal is now held firmly by producers at 13½ cents, with January at 13⅝ cents and later positions ranging up to 13¾ cents.

Tin.

Tin has been uniformly quiet but steady and above the usual parity of London by reason of the rise in sterling exchange. Prices are quoted for spot Straits at 29¼ cents and futures up to 29½ cents, as to position. Arrivals during November have been 1,950 tons at Atlantic and 5 tons at Pacific ports. Tin afloat is estimated at 3,300 tons.

Lead.

Demand for lead has fallen off and is rather irregular. But lack of buying interest has not as yet affected the price which is maintained at the old current quotations of 4.70 cents for New York and 4.35 cents East St. Louis delivery.

Zinc.

Consumers are again out of the market for any quantity and while prices are unchanged the tone of the market is somewhat easier at 4.75 cents for East St. Louis delivery. The Metal Exchange quoted at the close of the week New York delivery unchanged at 5.05 cents and basis East St. Louis at 4.70 cents for spot and 4.725 cents for December.

Other Metals.

Quotations on other metals in New York are as follows:

Aluminum Powder .....60 to 65 cents per lb.
Aluminum (in 50-ton lots) 99% and purer..25 cents per lb.
Antimony (Chinese and Japanese).....4.55 cents per lb.

New York Old Metal Market.

The following prices are current for old metals:

	Buying	Selling
Copper, heavy	10½ to 10⅝ cents	11⅝ cents
Copper, light	8⅝ to 8⅞ cents	9⅞ cents
Brass, heavy	4¾ to 5 cents	6 cents
Tea lead	2½ to 2¾ cents	3¼ cents
Lead, heavy	3⅞ to 4 cents	4⅛ cents
Crucible copper	10¼ to 10¾ cents	11¾ cents
Solder joints	5½ to 6 cents	7 cents
Zinc	2½ to 3 cents	4 cents

Chicago Old Metal Market.

Chicago wholesale dealers' prices are nominally as follows:

	Buying	Selling
Heavy yellow brass	5 to 5¼ cents	6¼ cents
Brass, light	4 to 4½ cents	5½ cents
Red brass	7½ to 8 cents	9 cents
Copper, heavy	9 to 9½ cents	10½ cents
Copper, light	7 to 7½ cents	8½ cents
Lead, heavy	3½ to 3¾ cents	4 cents
Zinc,	2½ to 2¾ cents	3¾ cents

In the New York Supply Market.

New York, N. Y., November 20.—While it would be by no means correct to say that the New York plumbing supply business is in the doldrums, there is undoubtedly a temporary stagnation, more apparent of course in some quarters than in others. One must hasten to add that this is the ordinary seasonal dullneess and is not taken seriously by the supply houses themselves.

What business there is, is being eagerly competed for, and this leads to considerable under-cutting. Some of the older-established houses are standing aside altogether from business offerings where extravagant price competition is involved. It may be noted as one good feature of the situation that while under-cutting is undoubtedly prevalent in certain quarters, prices as a whole remain steady and are uninfluenced by these temporary fluctuations.

The dullness and price cutting referred to are naturally both much more in evidence among the downtown houses catering for industrial business than among those houses which are interested in the suburban home-building. The latter are enthusiastic about the proposal to extend the tax-exemption date for a further two years beyond the present limit of April 1st, next. It is stated that with such an extension, and aided perhaps by an open winter—regarding which it is a case of 'so far, so good'—the new year may see a quite worth-while revival in the building and allied trades. In any case though, there is not likely to be much doing until the turn of the year, when inventories have been taken and the decks cleared generally for action.

A fair demand for soil pipe is reported for the suburban home-builders and the same applies to wrought iron pipe. General plumbing supplies are also moderately active in the outlying districts, although it is understood many builders have obtained their requirements for the season, even in the suburbs.

The radiator and boiler supply business, while not bad, is not so good as it might be, the trouble being that most of the building that is proceeding is in the way of small houses where steam or water heat is not being installed. One prominent concern in the heating industry, which increased its prices all round some time ago, maintains the increases but in this connection it may be noted that when price reductions were prevalent this concern made more extensive reductions than any of the others. It is understood that the recent advances are more in the nature of correcting a previous too-large reduction than anything else.

The shipment situation continues satisfactory as compared with previous weeks or months, but it has not yet returned to the pre-war efficiency. This arises from the fact that the mills are only working at about 60 per cent of their capacity and this means smaller shipments all round with the railroad companies holding them up until a full load can be obtained. Another point that is noted in this connection is that in local jobbing circles the belief is extensively held that when the mills are working to capacity there will be a decline in the cost of overhead. and that this will be reflected in a price reduction to the supply distributors. Those who are advancing this theory point out that there are two factors which may presently work for a price reduction. The first is increased activity of the mills, and the second a freight rate reduction which would have to be preceded by a reduction in labor costs.

Both of these factors are regarded as well within the realm of probability in the near future but at the same time the supply houses are not taking them into account until they materialize definitely. As matters stand at present, and taking the season and everything else into account, it is unlikely that even if the supply houses were in a position to make price concessions this would improve business very greatly. With the turn of the year the position will wear a different aspect, and if around that time it is possible to reduce prices it will undoubtedly have an excellent effect on the demand.

The outstanding feature of the week in the New York market, as indicated by the above interviews, is a cheerful acceptance of the prevailing dullness on the ground that it is the normal condition at this time of the year, accompanied by a firm conviction that there is going to be a general improvement in the near future on a scale that justifies a big measure of optimism.

The Chicago Plumbing and Heating Market.

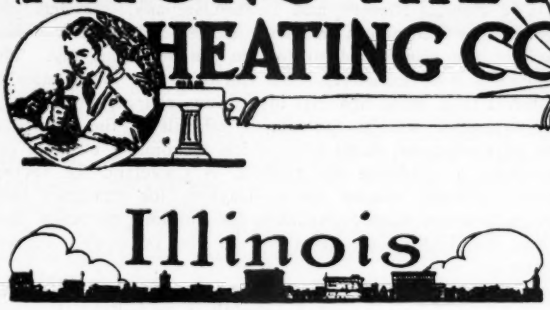
Chicago, November 22.—Business in plumbing and heating goods throughout the Chicago district is holding up fairly well. It is expected, however, that after the first of the year there will be a decided improvement, as at that time inventories will have been taken and stock replenishment will be under way. There have been no changes in price for quite some time and none is looked for in the immediate future. A reduction in freight rates will no doubt have a great deal to do with future prices, as one manufacturer stated: "One can not tell what's going to happen to prices if freight rates are reduced." This seems to be the opinion of many men in the trade, and with this in view they do not consider further reductions likely until various factors which enter into the business are finally adjusted.

The heating end of the business seems to be holding up a little better than the plumbing. Most of the business is going to the suburban districts where construction is going ahead without any serious delays. "Business is pretty good right now," reported one manufacturer of boilers and radiators. "In fact it is a little better than we had expected for this time of the year. After the first of the year, however, we expect to see business still better. Right now we have enough orders on our books to keep us going well into January, which gives us an encouraging outlook."

Pipe and fittings are also holding up fairly well. Most of this class of goods is going into heating work, with a small proportion being consumed by the plumbing industry. No changes in price were noted during the past week.

The contract for heating and plumbing in the new high school building in Fairview, Mont., has been awarded to the Montana Hardware Company of Fairview.

AMONG THE PLUMBING AND HEATING CONTRACTORS



Illinois

Chicago and Vicinity.

The Phillips-Getschow Co., 130 West Kinzie Street, has been awarded the contract to install heating in the three-story and basement Evangelical Lutheran church which is to be erected at Glenwood Avenue and Elmdale Street. The structure will be 150x150 ft., and will cost $200,000.

Harry Peckham, Jr., 2345 West Roosevelt Road, has the heating contract on the $85,000 factory building that is being erected for the J. A. Bell Bearing Mfg. Co., at 3305-3328 West Harrison Street. The building will be one-story, 125x165 ft.

The heating contract on the three-story flat building to be erected on Crystal Street near Spaulding Avenue, has been awarded to the Highland Heating Co., 1120 West Seventy-ninth Street.

J. J. Daly, 408 North Wells Street, has secured the plumbing contract on the $40,000 commission house which is to be erected at 301-303 North Peoria Street. The structure will be two stories, 50x110 ft. The plumbing contract on the one-story top addition to the office building at 4448-4456 Ravenswood Avenue has also been secured by this concern. The heating contract on this addition has been secured by William V. Hoier, 701 North Wells Street. The addition will cost $20,000 and will be 78x75 ft.

Plumbing in the store and apartment building under construction at 3937 Irving Park Boulevard is to be installed by the Schramm Plumbing Co., 3905 Irving Park Boulevard. The structure will be two stories, 50x110, contain two stores and apartments for two families.

Other Cities in the State.

Smith & McDaniel, 136 North Franklin Street, Decatur, have the contract to install plumbing in the $20,000 one-story cold storage building which is to be erected at 600 Van Dyke Street, in that city.

Architect A. Alschuler, 28 East Jackson Boulevard, has prepared plans for the construction of a $265,000 apartment building at Ridgeland Avenue and Washington Boulevard. This structure will be known as the Ridgeton Arms, and will contain apartments for twenty-four families.

The Savanna Consruction Co., Savanna, has had plans prepared for the construction of twenty residences in East Savanna, Ill. Each residence will cost in the neighborhood of $4,500, some having five rooms and others six or seven rooms.

Architects Ashby, Ashby & Schulze, 1511 West Jackson Boulevard, Chicago, have prepared plans for a $100,000 two-story township high school to be erected in Savanna.

Architect John Zimmer, Pekin, has prepared preliminary drawings for the construction of a $100,000 two-story community high school in Green Valley, Ill. This project will mature in the spring.

Architect H. J. Gaul, 111 West Washington Street, Chicago, has completed plans for a $210,000 hospital and boiler house to be erected in Centralia, Ill., for the St. Mary's Hospital.

Indiana

Indianapolis.

Opposition to the appointment by Lew Shank, mayor-elect of Indianapolis, of George Griffin as city plumbing inspector to succeed Joseph Swain, was expressed by about eighty representative plumbing and heating contractors of the city, Tuesday night, at a luncheon given under the auspices of the August Buschmann & Sons, Inc., in the Buschmann hall, College Avenue and Eleventh Street.

The Buschmann concern recently inaugurated the plan of holding such meetings every month in an effort to raise the standard of plumbing work in Indianapolis and to place the plumbing trade on a higher plane.

After a number of the plumbers present had expressed themselves as opposed to the appointment of Griffin, a petition calling on Mr. Shank to re-appoint Mr. Swain, was circulated by Arthur Paetz, president of the Indianapolis Society of Sanitary Engineers. More than seventy-five signatures were obtained at the meeting and many additional signatures have been obtained since then.

The petition, which praises Mr. Swain for his sound judgment in interpreting the practical application of technical features of the city plumbing ordinance, points out that Mr. Swain has saved the property owners thousands of dollars and at the same time has kept the plumbing work at a high standard. The petition reads as follows:

"The undersigned Master Plumbers and Steam Fitters of the city, urge you to retain in his present position Mr. Joseph Swain, Plumbing Inspector.

"This request is made on a non-political and non-partisan basis, because of our experience with Mr. Swain and our sincere belief that in his position he has displayed real intelligence, great energy and courtesy in dealing with us, the owners and managers of the principal plumbing and heating businesses of this city.

"Mr. Swain has used a great deal of sound common sense in interpreting the practical application of the technical features of the plumbing ordinance, and in doing so has saved thousands of dollars for property owners of this city and at the same time held the workmanship up to the standard demanded by the best plumbing contractors.

"So strongly have we been impressed with Mr. Swain's efficiency and so sincerely do we believe that his retention will be for the best interest of the community in general that we urge you to keep him in his present office during your administration."

The meeting of the plumbers was called primarily to explain the details of the new Buschmann payment plan, which was devised to enable property owners to have sanitary plumbing installed and to pay for it in small monthly payments. The plan was prompted largely by the new sanitation ordinance, which requires property owners to make sewer connections or install septic tanks.

Details of the payment plan were discussed by A. W. Buschmann, president of the company, who presided at the

luncheon, Marlin Prather, representing the Morris Plan Bank, explained the function of the Morris Plan Bank in connection with the payment plan, also discussed the making of contracts between plumbers and their customers.

E. H. Kingston, sales manager for the Buschmann Company, outlined the company's sales policy and invited criticism and suggestions from the plumbers. "If you have something to suggest or if you have some criticism to offer, we will be only too glad to hear it," he said.

Although no definite action was taken it appeared that many of the plumbers are opposed to Shank's proposed efforts to bring about the repealing of the new sanitation ordinance. The plumbers expect to invite the new mayor-elect to their next meeting and talk their plumbing problems over with him. It also was announced that practical demonstrations in plumbing work will be one of the features of future meetings.

Griffith.

Carried for more than 100 ft. after being struck by a Michigan Central train at a crossing near Hammond, C. G. Russell, who has a plumbing establishment in Griffith, has been receiving the congratulations of his friends because he still lives to tell the tale. The train, which was traveling at a fairly high rate of speed, caught the automobile containing the plumbing contractor and carried it more than 100 ft. Mr. Russell escaped with only a few minor bruises.

Other Cities in the State..

Work of improving the front of the Neal & Stoll plumbing establishment on Central Avenue, Connersville, was started this week and when completed will greatly improve the appearance of the place. The old wooden framework is being removed from the show windows and copper is being installed in its place.

Cleveland and Vicinity.

More inquiries, backed by actual placing of contracts, in both heating and plumbing branches of the industry here, prove still more conclusively, in the last week or so, that the move toward more building through the winter and into next spring, whether natural or inspired by the construction industry as a whole, is an assured fact.

Two movements are under way for promoting building through the winter. One is an outcome of suggestions offered some time back by the General Contractors' Association of Cleveland, that a committee be appointed to remove obstacles to more building and formulate a constructive program. The other is a move to create a larger home building and general building fund, independent of banking or other institutions. Both efforts, though independent of each other, are expected to create confidence in the building industry by the public, make for more work for both contractors and labor, and indirectly make for greater prosperity to the community.

The first plan finds its inception in the mayor's committee on unemployment. This conference comprises 50 leading citizens. It proposes the appointment of a committee from this body, representatives in no way identified with the building business, whose object will be to make a careful survey of the building situation, aim to restore confidence, and formulate a plan of steady progress in building activities so that a return to normal will be noted not later than March 1. The inquiry will extend into costs primarily, so that the true values may be laid before the public.

As has been stated before in this column, lack of money to finance building, whether housing or commercial or industrial structures, has been one of the chief problems of heating and plumbing contractors here in closing projects with prospective builders. The same condition apples to all other branches of the construction industry.

The Fourth Savings and Loan Company, has been organized by contractors and labor in the building field. These will be the principal depositors in the new company. The money will be loaned to them and others at lower rates of interest than other financial institutions charge, and, equally important, it will be the aim of officials in the enterprise to have adequate funds with which to conduct building operations, a condition not realized in Cleveland for several years, though smaller cities, Dayton, for example, have actually more money available for building purposes than does the Fifth City, according to the company's investigators.

The company starts off with an initial fund of $5,000,000, and this will be augmented, in addition to individual investments, by surplus from the treasury of each building trade union, of which there are 25 identified with the parent body, the Building Trades Council. Representatives from each of these trades unions will be on the board of directors also, according to the present plan.

Since this plan will make for more work for both employer and employe in the building business here, a closer co-operation between both factions already is being attained. This does not mean the breaking down of relations as far as policy is concerned, however, as the same agreements on working conditions, wages and the like will continue, according to Charles Smith, business agent of the Building Trades Council.

The officers of the new savings company are: George F. Hart, president, formerly vice-president of the Guardian Savings and Trust Company; C. C. Nims, vice-president, and president of the Building Trades Employers' Association; W. F. Hennessy, secretary-treasurer. Walter Vretman is chairman of the board.

Gains in building here are indicated best by figures for the month, which show an increase much out of the ordinary over the same period a year ago, $5,000,000 work being contemplated or contracted for this year against $2,000,000 for the same time last year. The first ten months of 1921 fall below the same period of 1920, the loss to date being about $15,000,000. At the present rate of gain, however, this deficit will be materially reduced, if not wiped out entirely, by the end of the year, contractors here believe. In the number of projects there is a gain, though, this probably is accounted for by the reduction in prices on some materials and the moderate reduction in the cost of labor.

New work continues to come forward as proof of the building improvement in the closing months of the year. Heating and ventilating work for the Hawthorne and Whittier schools, Lorain, has been taken by the Chappell-Warren Co., both projects totalling about $70,000. The heating and ventilating for the Immaculate Conception School, Bellevue, Ohio, goes to the W. B. Van Sickle Co., and will run around $15,000. Completion of the Bulkley Building marks the completion of one of the biggest heating and plumbing projects let here this year, aside from strictly public work. This has been completed by the W. G. Cornell Company of Cleveland, and includes ventilating and vacuum systems as well, at a total cost of $300,000. Contracts also awarded to the Cornell Company include the mechanical equipment for the new City Hospital, at $650,000, and the plumbing for the Wade Park Manor Apartments, which will cost about $275,000.

Preparations already are under way by the Ohio Master Plumbers' Association for the convention, to be held at Canton, Ohio. Among the features on the tentative program will be a representative from the National Trade Extension Bureau, who is expected to bring information keenly desired by the membership throughout the state.

Florida

The Mothers Club and Civic Clearing House have endorsed the proposed $1,000,000 bond issue for additional school houses in Jacksonville and Duval County. This money along with the $4,000,000 already provided by the City bond issue for sewer extensions and other improvements will mean additional business for plumbing contractors of this and nearby cities.

On the former site of the Orlando Chamber of Commerce building there is now under construction a $1,000,000 eleven-story hotel building.

Architect H. J. Klutho, of Jacksonville, has completed plans for the construction of an extension to the Florida State Capitol building in Tallahassee.

Tentative plans for the proposed Children's Home building to be erected in Tampa will soon be submitted to the Executive Board of that institution. More than $100,000 will be spent on this work.

Building permits issued in Miami during October were valued at $331,000, while during the corresponding month last year the permits were valued at $311,000. For the first ten months of the year permits valued at $4,250,500 were issued.

Plans are being prepared for the construction of a ten-story building for the First National bank in Miami.

James K. Stathis is planning the erection of a five-story hotel on Forseyth and Cedar streets, Jacksonville, to cost about $100,000.

Rhode Island

Architect Joseph A. Hickey, 142 Atlantic Avenue, Providence, has prepared plans for four new houses for Leary & Leary.

Architect Robert Monahan, of Pawtucket, has prepared plans for a new elaborate residence on Freeman Parkway in Providence.

Architect Charles H. Lockwood, of Providence, has prepared plans for three one-family houses on Wayland Avenue of eight rooms each. The structures will have steam heating and tiled bath rooms.

Jackson, Robertson & Adams have prepared plans for the new three-story brick office building 40x60 ft., which is to be erected at Westminster and Fenner streets.

Architects Page & Page, of Providence, have prepared plans for a large residence for Dr. Edward F. Gill to be erected on President Avenue.

William G. Richards, 17 Exchange Place, has prepared plans for a three-story addition, 50x100 ft., to the Knights of Columbus building on Greene Street, Providence.

H. W. Seaborne, Hoppin Homestead Building, Providence, has the contract for plumbing in the George P. Newell residence in Washington, R. I.

Charlotte, N. C.—A Sunday school building to cost approximately $60,000 will soon be erected for the First Baptist Church. The structure will be 80x70 ft. The plans call for a steam heating system.

Fayetteville, N. C.—The Huske Building Corporation plans the construction of a five-story building on Hay Street in this city. The proposed structure will cost $100,000, and will have four stores on the first floor and offices on the other floors.

New York

"Bath a Day" Campaign in New York City.

Dr. Royal S. Copeland,

Although the Health Exposition held at the Grand Central Palace, New York City, from November 14th to 19th, did not directly concern itself with the "Bath a Day" movement, Dr. Royal S. Copeland, health commissioner of New York City and organizer of the Exposition, and incidentally the busiest man in little old New York today, found time to express his warm commendation of the campaign featured by "Domestic Engineering" when approached by a representative of this publication and asked to give his views on the subject.

Getting to talk with Dr. Copeland while the Exposition was in progress was about as difficult a problem as breaking into the National City Bank. He sat in a railed-off space at the Exposition with a private detective outside and three secretaries inside, and several thousand prominent visiting physicians from all over the world constantly seeking his attention.

Nevertheless, when the representative of "Domestic Engineering" did finally manage to get his ear, Dr. Copeland was so interested in the "Bath a Day" campaign started by this paper that he discussed it at considerable length. He was emphatically in favor of the campaign and said so with enthusiasm.

"In favor of your Bath a Day campaign?" said Dr. Copeland; "I certainly am. Every man, woman and child, unless physically unfit, should take a bath a day; should take at least one bath a day. I wish you success in your movement."

Dr. Copeland is one of the best known public health officers in the country and it is noteworthy that during the recent mayoralty contest, when the air was full of accusations and counter accusations there was not anything charged against either the Health Department, or Dr. Copeland personally. It was generally recognized by both parties to the contest that under Dr. Copeland's administration the health department has reached a degree of efficiency beyond anything previously attained; and this fact is both pleasing to record and adds weight, if it were necessary, to his endorsement of the "Bath a Day" campaign.

"The Bath a Day idea," he added, "is one of the allied problems in public health administration, in which, of course, what I might call private health is really the main factor.

"We are coming to the stage when the problems of public health, and their allied problems, are going to play a much more important part than they have been doing; and civic authorities have got to realize that it's no use tackling the main problem if they do nothing about the allied problems.

"Your Bath a Day Campaign covers one of those allied problems—the education of the people in personal cleanliness—but we are hampered by this fact. I, as health commissioner, might favor the Bath a Day habit, and you, as citizen, might also favor it, but we are both at the mercy of the builder and the landlord. If he doesn't choose to equip his house with proper bathing facilities, in nine cases out of ten he can get away with it."

"What I'm driving at is this," he continued earnestly: "At present builders' plans are passed upon by a body con-

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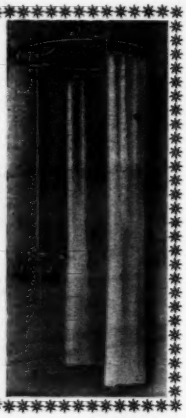

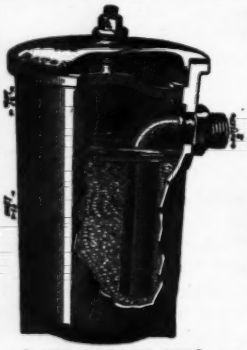

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Representatives in Principle Cities

stituted for that purpose. They pass on everything, although there are many angles in house-building that can only be properly passed on by the health department, such as ventilation, sanitation, bathing facilities, kitchen equipment, facilities for garbage disposal, and so on. Yet no representative of the health department has anything to say about these vital matters.

"After the house has been built—after the horse has been stolen, if you like—the health department can take action in cases where a house is unfit for habitation. My contention is that this is not merely beginning at the wrong end but that it precludes any worth-while reform in the housing problem. The health commissioner should be an ex-officio member of all bodies that pass on builders' plans. He should be in a position to blue-pencil the plans from the public health angle before a single foot of foundation is dug out.

"When we get that reform established your Bath a Day Campaign will start fairly and squarely on the basis that it's up to the people. Today, in many cases, the people are not in a position to follow such a campaign because the houses they live in, in far too many cases, have not adequate facilities for bathing.

"I wish the people who regard these matters so lightly and who speak of Bath a Day people and other health reformers as cranks could realize what vital issues swing on these problems. The alarmingly large percentage of physical defectives disclosed in all our countries by the war is really an indictment against our public health authorities; and our public health authorities are handicapped at every turn by the fact that they have no say in ensuring that public health standards shall prevail in house-building.

"Every man, woman and child should take a bath a day, unless their state of health is such that it might be unwise to do so. Especially should the bath a day habit be inoculated in the children because if they get the habit while young they are more likely to stick to it in later years. Adults, on the other hand, take up the habit and drop it again half a dozen times in a few years."

Dr. Copeland returned again and again to his insistence that the health department should be represented on all bodies passing plans for new houses.

"My department, that is, health departments all over the country, should have a say in all classes of building, whether it be a private residence, an hotel, or even an office building or a factory, everywhere where human beings will have to live. That is the way they do in Great Britain, where, in this respect at any rate, they are more advanced than we are.

"I suppose that in time we shall achieve that reform here also, and when we do, you can say that the public health administration of the city is beginning in real earnest. We shall be in a position then to write the Magna Charta of public health on enduring lines. We shall be able to say that for every house of so many people there must be so many bathrooms, so many shower baths, if you like; and the mere fact of having those facilities will remind people to use them.

"There is everything to be said in favor of your campaign and nothing to be said against it. The taking of a bath a day will promote good health, virile, robust health, and that after all is the secret of all success in life and family life success also."

Among the New York Master Plumbers' Associations.

The Manhattan Association of Master Plumbers has been considering a new wage agreement but the question has been shelved until the end of the year.

This matter came up at the last meeting of the Association, with David Diegan, president, in the chair. No details have been given out for publication as the discussion was more or less informal and anyway nothing was decided; it was just postponed.

The arrangement for the proposed inter-association Plumbers' Dance and Entertainment, mentioned last week, is going ahead, and the various plumbers' associations in and about New York are meeting the suggestion with general favor.

The Hotel Men's Exposition in New York City.

Several firms in the plumbing and heating industry took advantage of the opportunity afforded by the Hotel Men's Exposition, recently held at the Armory of the Sixty-ninth Regiment, Lexington Avenue and 26th Street, New York City, to bring to the attention of hotel proprietors the latest improvements in heating, ventilating and sanitary devices. It was an unusually good opportunity, for the exposition was the biggest thing of its kind ever attempted, and hotel men came from all over the country to view its wonders.

The visiting hotel men, particularly those from the smaller towns, were obviously interested in the exhibits which showed how the Statler, Bowman and several other leading hotels have solved their heating problems down to the last detail by the installation of modern devices. They appeared to be equally impressed, too, with the evidence presented at the exposition of the big strides that have been made in sanitary equipment for hotels, both as regards efficiency and attractiveness.

Among the exhibitors were: Warren Webster & Co., Eastern Gas Appliance Co., W. R. Hughes Co., the Fairfacts Co., and the General Gas Light Co.

Plan Extension of Tax Exemption on New Buildings in New York.

Plumbing and heating contractors in New York City are naturally very jubilant over the proposal under consideration by the Lockwood Committee to extend the April 1st limit for tax exemption on new buildings to two years ahead. It is considered that this will give the building and allied trades the long-awaited boost which will put them on the high road to prosperity again.

As the Tax Exemption Law now stands buildings begun between April 1, 1920, and April 1, 1921, and completed within eighteen months are exempted from taxation for ten years. If the suggestion made before the Lockwood Committee is enacted as an amendment to the present law, the period under which tax exemption buildings may be started would be advanced one or two years.

"More than $200,000,000 worth of homes have been built or planned since the present Tax Exemption Law was passed in February of this year," said Senator Charles C. Lockwood, chairman of the committee generally called by his name.

New Jersey

Trade Extension Work in New Jersey.

On Monday evening, November 7, Daniel L. Hanson, New England representative of the National Trade Extension Bureau, addressed members of the Camden, N. J., Master Plumbers' Association in the association rooms in the Goff building. Mr. Hanson spoke on the need for competition between industries rather than between individuals in the industry, illustrating his talk with charts. He also stressed the need for more knowledge of the cycle of depression which he declared was so peculiar to this country. A representative of one of the leading newspapers in that town attended the meeting and took a live interest in the discussion that followed the talk. He said that not till that evening had he had any knowledge of what the plumbing industry really was. The following day the newspaper which he represented gave a comprehensive account of the meeting, and told of the work being done by the plumbing industry.

Tuesday evening, November 8, Mr. Hanson found him-

"Burlington"
Self Closing Work

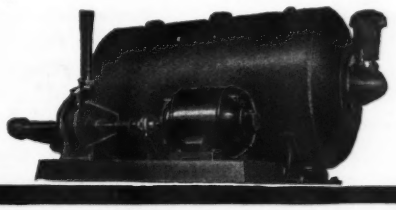
No. 31

A Self Closing Basin Cock Must be Tested Under Actual Operating Conditions To Prove Superiority

We want you to make your own tests and we know you will secure absolute satisfaction.

Also made in Sink Bibbs, etc.

Burlington Brass Works
Burlington, Wis.



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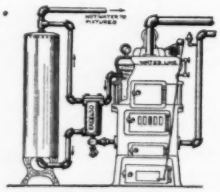

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it is a **proved** success, because thousands are in satisfactory use, because the biggest boiler manufacturers endorse and sell it.
Connects on **outside** of any steam or vapor heating boiler. Generates **constant** supply of uniformly hot water, at lowest possible cost.
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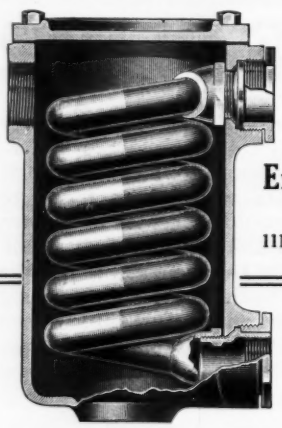
Write for details and prices.



Sectional View

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Excelso Specialty Works
111 Clinton St. Buffalo N.Y.

Special New York City Representative
John G. Kelly
137 East 43rd Street

The Original
First in the Field

self in the midst of an exciting election in Atlantic City, but, in spite of this, many master plumbers of the city turned out for the meeting. Mr. Hanson's talk to the plumbers was on the possibilities of getting more business from old buildings. Much interest was also shown in the government chart showing the death rate of babies under varying conditions of sanitation. Community advertising in which the local association advertised both itself to the public and to non-members was thoroughly discussed.

Portland.

Bids have been received by the Public School Buildings Committee of the city of Portland for an addition to the North School together with repairs to the present structure. The bids indicated a total cost of about $250,000 with only $200,000 available for the work. What steps will be taken has not been decided. Plumbing and heating bids were as follows: Reardon Brothers, Lynn, Mass., plumbing $11,372; heating $54,776 (combination $62,500); Scribner & Iverson, Portland, plumbing, $13,155; A. H. Moulton, Portland, heating, $52,840; Willey & Calhoun, Portland, heating $53,627; Kezar & Stoddard, Portland, heating $53,795; Meyers & Mahoney, Portland, plumbing $13,540; W. E. Nugent, Portland, plumbing and heating, cost plus $3,500.

F. E. Wheeler, of Portland, has been awarded the contract for plumbing work in the Deering High school and the Heseltine school buildings in that city.

Leslie Luce has been taken into partnership in the plumbing business of Bangs Bros., at Mars Hill, and hereafter the firm will be known as the Mars Hill Plumbing Co.

W. J. Silk,, a Bar Harbor plumber, was called upon for an unusual job recently. A New York woman stopping at "Jacob's Well," in the exclusive residential section of Bar Harbor lost a diamond ring which she valued at $2,000. She feared it had gone down the outlet of the lavatory and called in Silk for expert advice. Silk made a search of the plumbing and recovered the ring.

Contracts have been awarded for a new mill building at Lincoln for the Lincoln Worsted Company, which is expected to cost about $100,000. The plumbing was awarded to C. H. Babb Co., of Bangor.

Kansas City.

General Secretary W. C. Green, of the Kansas City Society of Sanitary and Construction Engineers, in a circular letter to members of this organization, has this to say about "Competition":

"Competition is the impelling force in business. It proves every enterprise—eliminates the weak, rewards the strong. It compels new ideas, better methods, greater efficiency. It sets the highest standards for success.

"Successful competition is the ability to exchange a desirable product or service at a fair profit. Exchange without profit is loss. Inability to offer the same value as competitors is a handicap. Under exacting conditions such loss and handicap is failure.

"In competition, knowledge of your business is power to win. Timely and dependable facts and figures from every source, obtained through the application of sound methods of cost accounting, give exact cost and overhead, and establish the basis of fair profit. They reveal inefficiency, weakness and waste. Knowledge, and the practice, of better

methods eliminate these; and the bugaboo of competition disappears."

Mrs. E. D. Hornbrook, Kansas City, Mo., president of the Women's Auxiliary to the National Association of Master Plumbers, has had prepared in multigraph form copies of the constitution of the Women's Auxiliary to the Association of Master Plumbers of Kansas City, Mo., which are being sent out to the members. Mrs. Hornbrook is actively interested in this work, and has been instrumental in building up the Auxiliary.

Endorse Limitation of Armaments.

The Heating and Piping Contractors' Association of St. Louis, Mo., at its regular monthly meeting last week passed resolutions endorsing the limitation of armaments and urging that all the conferences on the limitation of armaments be held in open session.

California

San Francisco and Vicinity.

For the first time since the war San Francisco held a fair, or as the current expression goes, an Industries Exhibit. This was held during the third week in November, and more than 500 San Francisco industries were represented. Among those present in the plumbing and heating trades was the exhibit of the Westcoast Porcelain Co. which was under the direction of Peter Schubert, publicity manager. About 1,000 invitations were sent out to plumbers, jobbers and architects before the exposition, so that the goods met a good many technical observers as well as laymen. The Pacific Porcelainware Co. and the Pacific Sanitary Manufacturing Co., of San Francisco, also had a large exhibit of plumbing fixtures. This was in charge of L. J. Waldear, service manager of the Pacific Sanitary Mfg. Co.

Francis J. Baker, president of the George H. Tay Co., of San Francisco, returned recently from a business trip to the Atlantic coast. Mr. Baker is registering satisfaction in the outlook for business all along the line and is of the opinion that readjustments in prices and labor conditions have been made which will mark renewed activity in building of all kinds.

M. E. Wangenheim, sales manager of the Pacific Sanitary Manufacturing Co., San Francisco, returned recently from a five-weeks' trip in the east.

Other Cities in the State.

Charges that property owners of Monrovia are being deterred from building operation through the strict nature of the city's building ordinances, have stirred up a city and press controversy. Citizens of Monrovia assert that it costs more to build there than in other towns close by, chiefly because the building inspector interprets the regulations too rigidly. Some of the plumbers of Monrovia state that it is possible that from 15 to 20 per cent of the present cost of plumbing might be eliminated and an adequate and sanitary job might be secured.

Another new grammar school will be built and additional buildings and improvements made at the Lodi Union high school according to Rollo J. Custer, principal. The seven present needs of the system are: A main building to be used for academic classes only, a larger auditorium, new science and cafeteria building, new shop and agricultural building, a girls' gymnasium, a swimming tank, a grandstand and a fence for the athletic field.

The high school building at Santa Rosa, valued at about $70,000, burned recently. It housed 1,000 pupils, and the shortage of school houses calls for immediate rebuilding.

Coots Bros., proprietors of the South Pasadena Plumbing Co., 1715 Mission Street, have commenced excavating for the erection of a one-story 50x75 ft. brick store building for their plumbing business.

Reliable Sanitary Floor Drains

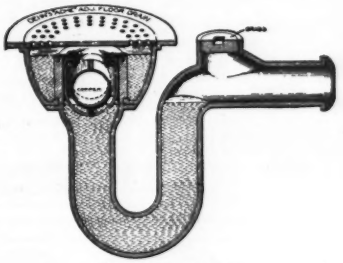

Fig. 7—Patented

Dehn's *"AcmE"* Deep Seal Continuous Pipe Trap Floor Drain with Automatic Back Water Valve.

Approved and recommended by all Departments of Health and Sanitary Engineers. These have stood the test for many years.

Beware of the Infringer and Imitator with his contraptions.

We manufacture a full and complete line of Floor Drains for every type of installation.

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Compound Injector & Specialty Co.

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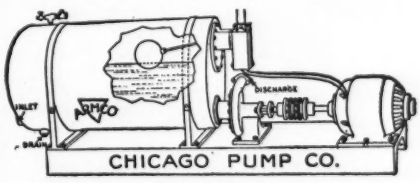

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Perfect Vapor-Vacuum-Pressure HEATING SYSTEM

Three systems simplified and combined into one—the most flexible, economical and efficient of any.

There are many good reasons why the "O-E" Perfect System should be used instead of water, gravity steam, straight vapor or vacuum heating.

Let us tell you how to convert unsatisfactory steam and hot water jobs into "O-E" "3-in-1" systems. The expense is nominal as compared with results.

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BRASS GOODS FOR PLUMBERS
A complete line covering every requirement

Original designs, finest finish, reliable and durable in service. Get our latest Catalog. It will assist you in ordering your brass supplies.

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Closet Tank fittings are not the cheapest and are used by Manufacturers who want the best.
LOOK IN THE TANK
Ballcocks, Flush Valves, Hinges, Flush Levers, Etc.
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A Floor Drain That Makes Good Wherever Installed

A special, outstanding feature of this drain is the Shilvock Double-acting Copper Ball Valve—a double precaution and positive guarantee against back water. Ball is automatic—brass disc operates by hand.
Tested, tried and proved efficient.

CHICAGO AGENTS
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Oregon

Portland.

Claiming that the 1925 World's Fair planned for Portland would start a $30,000,000 building program in Oregon, a circular has been sent to some 100,000 people in Oregon by the exposition committee, in its campaign to secure the support of the public for the Fair. Support of the exposition has been pledged by delegates from the building trades council and various other labor organizations in the city.

Plans are being prepared by Houghtaling & Dougan, Portland, for a three-story brick and concrete building at 9th Street, between Oak and Burnside, for T. M. Fitzpatrick. The structure will be 99x122 ft., and will contain store and office quarters.

The Vernon Hotel, 103 Twelfth Street, Portland, has been purchased by J. L. McBridge and C. E. Yeager. The structure will be completely remodeled, including the installation of additional plumbing.

The Imperial Arms Company, Portland, recently purchased a site, 100x100 ft., at Fourth and Pine Streets, on which it is proposed to erect a five-story reinforced concrete garage for storage of automobiles. The ground floor will be devoted to stores.

Architect D. L. Williams, Chamber of Commerce Building, Portland, has completed plans for a two-story concrete building, 50x100 ft., to cost $20,000, to be erected at 13th and Stark streets for Charles A. Burckhardt.

Canada

THE PROVINCE OF ONTARIO.

Hamilton.

Work in the plumbing and heating trades in Hamilton is still very brisk. One of the larger firms here, The Robert Fitzsimmons Co., is especially busy with some very large contracts, notably the plumbing and heating of the Firestone Tire & Rubber Co.'s factory, the Libbey Owens Glass factory, and the St. Lawrence school.

The firm of Hugh Whitham & Son, also has some good contracts on hand, mainly in residential and apartment work, some of his larger being the Ambrose residence, Charlton Avenue, the Donaldson apartments on Robinson Street, and three residences for M. Kennedy & Co., on Hughson Street, North.

Other contracts recently awarded are the following:

O. Clayton will install plumbing in the Carrolls stores, York and Inchbury Streets, and two dwellings on Edgemont Avenue for G. Darlington.

James Saynor has the plumbing contracts on two dwellings to be erected on Barnesdale Boulevard for Sparks & McKay, two on Spadina Avenue for W. Atkinson, and two on Kensington Avenue for Joseph Vickers.

P. A. Moore has the contracts to install plumbing in the Elliott apartments, Emerald Street, North, and two dwellings on West and Robert Streets for W. T. Tomes.

W. A. Canning is to install plumbing in two dwellings on Connaught Avenue for W. T. Dyment, and a store and apartment building on Crosthwaite Avenue for the same owner.

Buchanan & Macbeth will install plumbing in the Anderson residence on Wellington Street, South, and the new residence on Prospect Street for H. E. Hawkins.

BUSINESS AND FINANCIAL CONDITIONS IN THE UNITED STATES.

(Continued from Page 412.)

imports of goods, partly in order to hold to a minimum the amount of gold they must send abroad in payment.

Our Anomalous Position.

Doubtless if we are to remain a creditor nation we must some day reverse our merchandise trade balance, for we cannot go on indefinitely selling abroad merchandise in so much greater amounts than can be offset by our purchases of foreign goods and services. Nevertheless, several signs point to a continuance, for the immediate future at least, of this anomalous condition.

The principal factors indicating that our foreign trade may continue for a time to show a favorable balance are the continued placing by American investors of part of their capital increment in foreign securities, both foreign currency and dollar bonds, the continued suspension of interest on debts owed by foreign governments to the United States Government, and the need of the world for goods which can still be produced more cheaply here than elsewhere.

Investments by Americans this year in all classes of foreign securities, it now appears, should be approximately $500,000,000, a part of which is for refunding purposes. This is equal to the amount of a year's unpaid interest on debts owed to our Government. This American investment abroad is essentially a new item of the greatest importance in our foreign trade balance; how important can be seen from the fact that it will offset one-fourth of the merchandise balance for the year, if that should amount to $2,000,000,000, as is now indicated. This compares with net imports of gold from January 1 to September 30 of this year of $548,854,916, which, if they continue at their present rate, should be in excess of $600,000,000 by the end of the year. The amount of private American investment in foreign securities was comparatively small until 1915, but since that time it has been of large significance in relation to our foreign trade balance.

The Government, by its loans to other governments, carried the principal burden of our foreign trade financing during the war, a burden which was re-assumed by the bankers of the country in 1919. The bankers had been carrying this burden before we entered the war, although it was increasing rapidly in 1916; but the repetition of such large balances as the United States has had in the last few years must exhaust available banking credit, which is appropriate for short-term financing, unless a part of the foreign credits can be funded into long-term debt taken by private investors. The part which the American private investor is playing in this effort to uphold our foreign trade during this period of readjustment is scarcely realized by the public, and is only equaled, relatively speaking, by the course of British investment and trade after the Napoleonic wars.

Advantages of Quantity Production.

Another justification for the expectation that our merchandise export trade may continue to run for a time in excess of our imports is the fact that the United States is able to supply the needs of the world for a wide variety of goods, especially food, raw materials and certain manufactures in quantities and at prices which compare favorably with those of other countries. This is not due to any natural monopoly of either raw materials or finished goods—the sources of supply are too large and the competition in foreign markets is too keen to permit any such advantage—but rather to the better organization, generally speaking, of quantity production here than elsewhere. Manufacturers in the United States have succeeded in standardizing to a great extent the most minute parts of their finished products, of which standardization the automotive industries are perhaps the best known example. The importance of their success, together with our wealth of raw materials, can scarcely

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CHICAGO POTTERY CO.
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In the manufacture of
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It is manufactured in and delivered from 27 cities, from Maine to California. Do you realize the big opportunity open to you to go after and secure good profitable business? Write Dept. E for detailed information.
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Why worry along with torches that do not generate heat and clog. TURNER NEW LINE TORCHES cost no more and satisfaction is guaranteed.
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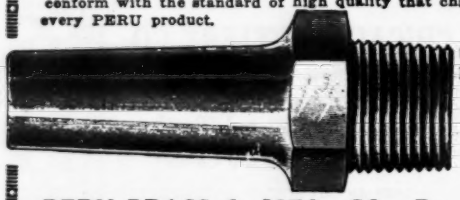
PERU Solder Nipples

Made of best grade brass to conform with the standard of high quality that characterizes every PERU product.



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A LEAD Product *for* Every LEAD Purpose

Lead Pipe—Lead Wool
Lead Tubing—Lead Roof Flanges
Lead Spun Acid Bottles—Refined Caulking Lead
Plumbers Lead Fittings—Bar Ribbon Ingot Lead
Bar Tape Wire Solder—Babbitt and Type Metals
White and Red Lead—Block Tin Pipe
Bar and Pig Tin—Pig Lead

THE EAGLE-PICHER LEAD CO.
JOPLIN CINCINNATI CHICAGO

STERLING

Sterling Radiator Trap

Vertical seat.
Closes against steam.
Steam tight.

WE ALSO MANUFACTURE
Thermostatic Traps, Air Line Valves, Graduated Supply Valves, Air Eliminators, Damper Regulators, Strainers.

STERLING ENGINEERING COMPANY
MILWAUKEE, WISCONSIN

No. 1

Hanna Ball Joint Pipe Hanger

Guaranteed Strongest Made

The "Ball Joint" Pipe Hanger swings in any direction. Pipe can be adjusted higher or lower without removing hanger.

Made of malleable iron.

Write for "Our Silent Salesman"

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be overestimated, for it makes possible the manufacture, in large quantities and at low costs, of the finest articles desired by many consumers.

Moreover, the foreign demand for many raw materials and food stuffs produced here in great quantities is still strong, although certain commodities such as copper are sold in but limited quantities at present. Investigation by the Department of Commerce indicates that articles representing 98 per cent of the total value in the fiscal year 1921 of the crude material exports of the country increased by 34 per cent in quantity in 1921, over 1920, although the total value decreased by the same percentage. Likewise, articles of food forming in value 86 per cent of the total food stuffs exported in 1921 show an increase of 37 per cent in quantity and a decrease of 14 per cent in value in 1921 compared with 1920. The 161 classes of commodities which could be reduced to a uniform weight basis, forming 69 per cent of the total value of domestic exports in 1921, increased 23 per cent in volume over the preceding year while decreasing 19 per cent in value.

Clearly, if by our investments abroad and our purchases of foreign goods, we can help to provide the world with the means to pay for our raw materials, our food, and our manufactures, the course of trade will soon be quickened.

German Currency.

The sharp decline of the German mark in recent weeks is attributed to both speculation in and inflation of the German currency, but chiefly to inflation, which makes speculation on a large scale possible. The result in Germany has been a hurried dumping on the market of speculative holdings of currency and purchases at rapidly increasing prices of mortgage bonds and industrial shares, in the belief that private credit is stronger than that of the Government.

The note circulation of the Reichsbank on May 31, 1914, was only 2,013,860,000 marks, which was practically covered by gold holdings of 1,313,240,000 marks, and these notes were convertible into gold at par. At the close of 1918, there were 22,188,000,000 marks of paper notes in circulation, excluding the loan notes, or Darlehnskassenscheine, which, although some of them circulate as currency, are secured by collateral pledge of stocks, bonds, and other securities. Behind the Reichsbank notes at this time were gold holdings of some 2,550,000,000 marks, but the notes were not then convertible into gold.

When Inflation Occurred.

The real inflation of German currency did not take place until the nation was faced with the necessity of paying the bill of damages, as the total amount of notes outstanding at the end of the war was small compared with the present total. The increases in the note circulation of the Reichsbank are compared in the following table with the decreases in the exchange value of the mark:

Date	*Note Circulation*	*Exchange Value of the Mark*
May 30, 1914	2,013,860,000 marks	23.80 cents (par)
Dec. 31, 1918	22,188,000,000 "	—
Dec. 31, 1919	35,698,000,000 "	2.01 "
Dec. 31, 1920	68,805,000,000 "	1.35 "
Apr. 30, 1921	70,839,000,000 "	1.50 "
May 31, 1921	71,838,000,000 "	1.57 "
June 30, 1921	75,321,000,000 "	1.30 "
July 30, 1921	77,390,000,000 "	1.20 "
Aug. 30, 1921	80,072,000,000 "	1.15 "
Sept. 30, 1921	86,204,000,000 "	.82 "
Oct. 15, 1921	87,547,000,000 "	.66 "

It will thus be seen that an increase of 20,000,000,000 marks took place in note circulation in four and one-half years of war; of 13,000,000,000 marks in the first year of peace, 33,000,000,000 in the second year, and 18,000,000,000 in the first nine and one-half months of the third year of peace, of which latter amount 16,000,000,000 marks have been issued since the signing of the Reparations Agreement in May. Reparation payments in money this summer have been met, therefore, largely by enormous increases in the

paper currency, which means that the money has been raised through forced loans not only from the German people but from foreign holders of marks. Gold holdings had decreased to 1,023,633,000 marks on October 15, 1921.

Causes of Inflation.

There are various causes, mostly political, for this great inflation of German currency. Germany financed the war almost wholly through loans and credit expansion. The former Government, unwilling to tax the people heavily, permitted war speculation and the growth of the war fortunes on a large scale. The present Government has likewise failed to embark on a strong program of taxation and failed to keep its expenditures within its revenues. The result has been an orgy of government extravagance, covered temporarily by the issue of paper promises to pay.

There seems to be popular approval of such a course. Speculation in marks, both foreign and domestic, was encouraged in order to help finance imports of needed raw materials and to keep the value of marks as high as possible by holding part of the superfluous currency out of active circulation. The shortsightedness of such a policy, which is based on the belief that a nation may be prosperous whatever the financial condition of its government, needs no comment.

Task Confronting German Government.

The task confronting the German Government is exceedingly difficult because rising prices have greatly increased the cost of government, and this has resulted in huge deficits. Actual receipts for the fiscal year ended March 31, 1921, were approximately 46,000,000,000 marks, while expenses amounted to 122,500,000,000 marks, leaving a deficit of 76,500,000,000 marks. A deficit of 33,000,000,000 marks is forecast for the present fiscal year. The Government debt has naturally grown enormously; the funded debt from 5,158,000,000 marks on March 31, 1914, to 78,300,000,000 marks on May 31, 1921, and the floating debt, consisting chiefly of discounted treasury bills, from insignificant amounts before the war to no less than 219,205,707,540 marks on July 31, 1921. This is exclusive of the reparation obligations of about 132,000,000,000 gold marks, and of the forced loans in the form of repeated note issues.

The task before the German Government is by no means hopeless, although it faces insolvency. France, through the Wiesbaden Agreement, has undertaken to receive the payment of reparations in commodities, instead of money, and it seems likely that similar agreements will be negotiated with other countries. But the German Government must restrain its own extravagance. It must tax its citizens in proportion to their ability to bear the burden, and meet its immediate requirements by a voluntary internal loan. Lastly, it must appeal to the patriotism of its people. This program, of course, would have to be predicated on the existence of a strong government, loyally supported by all sections of German public opinion; but if carried out it would restore the former credit of the German nation.

The Bond Market.

Contrary to the usual seasonal trend, interest rates are decidedly lower than earlier in the year and money is plentiful. During the present curtailed activity of industry many companies are unable profitably to employ all of their capital in their business and are seeking highly liquid forms of investment. This has created a demand for short-term investments, particularly United States Treasury Certificates. The market for these certificates is unusually strong and the heavy demand has carried yields to low levels.

Treasury purchases of Government war bonds during September were reported as $98,800,900 par value, $97,065,650 of which were Victory Notes, acquired in furtherance of Secretary Mellon's plan for redistribution of the short-dated debt. About $516,818,000 Victory Notes have been retired since the first of the year, the amount of these issues outstanding September 30, being $3,709,106,600. Although

ECONOMY EFFICIENCY

This is a

Pierce Down Draft, Magazine Feed, Smoke Consuming, Heating Boiler

Saves Fuel Labor

Manufactured only by

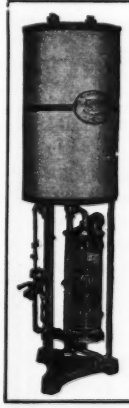
Pierce, Butler & Pierce Manufacturing Corp.

Brooklyn Boston Worcester NEW YORK Detroit Syracuse Newark Philadelphia Baltimore Washington

FOR lasting quality and true capacity use "**Koven**" Pure Iron Double Row Riveted, Galvanized Range Boilers, or **Naco** Galvanized Range Boilers made of open hearth steel. These boilers may be bought of jobbers everywhere.

L. O. KOVEN & BRO.

154 Ogden Ave.. - - Jersey City, N. J.

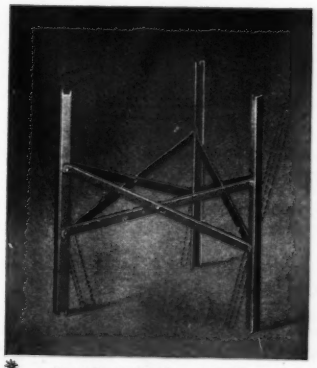


Automatic Storage Water Heater

KOMPAK

THE KOMPAK CO.
New Brunswick
New Jersey

C. B. BABCOCK CO.
San Francisco, Cal.
J. V. Landreth
New York, N. Y.



No. 1 Fits boilers from 30 to 52 gal.
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Fits Any Range Boiler

WESSELS
(Patented)
Adjustable Range Boiler Stand

Made of steel—strong and unbreakable. Easily installed. Fits closely to rim of boiler.

With the "Wessels" you are equipped to handle any range boiler job.

Write for Catalog No. 4

D. D. WESSELS & SON
1655 East Euclid Ave.
DETROIT, MICH.

BARRETT SEWER TIDE AND BACK WATER TRAP

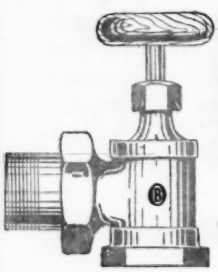
Guaranteed to Live up to Every Claim made for it

The Barrett Trap is so designed and constructed that it cannot fail to operate properly. Opens easily for outward discharge and closes positively against metal seat. Inlet is much higher than outlet, making a positive flush.

A satisfactory trap in every respect.

Ask for descriptive matter

James Barrett Mfg. Co. 115-121 Pearl Street Boston Mass.



Buy O-B Quality First Valves From Your Supply House

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Mansfield, Ohio

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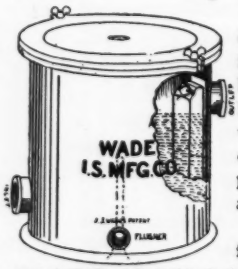
Wade Traps Are Sanitary



This grease trap for laundry trays with accessible flushing cleanout, is absolutely water and gas tight. No sewer gas can escape even when cover is removed for cleaning. Deep water seal prevents grease passing out and clogging waste pipe.

Write for catalog showing full line.

WADE IRON SANITARY MFG. CO.
551 W. Fulton St., CHICAGO

The DETROIT Torch

A Marvel for Service and Durability

Highest quality brass tank, heavily reinforced, powerful improved burner, strong, efficient pump, hook and support for holding soldering coppers.

This torch eliminates the troubles that attend the use of the old-style torch.

Get a "DETROIT" from your jobber. You will be more than pleased with it.

Detroit Torch & Mfg. Co., Detroit, Mich.

purchases of Liberty Bonds for the sinking fund have been light, other factors have stimulated the market for these issues, and prices have recently advanced rapidly.

For the first nine months of 1921, some $756,000,000 new State and municipal bonds have been placed on the market, which is well above the previous record for the same period of $520,000,000 made in 1919. Even with such large offerings of tax-exempt State and municipal bonds, the market has continued strong, which is probably attributable to Congressional action on the Revenue Bill.

During the month of October an additional offering of $60,000,000 Federal Farm Loan bonds was well received by the investment market. Although an amendment to the Federal Farm Loan Act permitted an increase of interest rates on these bonds to 5½ per cent, the improved market for tax-exempt securities made unnecessary any increase in the interest rate, and the new issues consisted of 5 per cent bonds at par.

Foreign Offerings Taken.

Investment in foreign government securities has the effect of encouraging the export of American goods and thereby assisting in the maintenance of our economic activity. Their high yields as compared with domestic issues make them attractive to investors, and the several new offerings in October were readily sold. The uncertainty of some European exchanges, particularly the German, was not reflected by any great recessions in the prices of foreign bonds during the month; on the contrary there was an improvement in the market for Scandinavian and Swiss bonds, while the new South American loans have held slightly above their issue prices.

While the railroad situation is still uncertain, funds for payments to the carriers have been made available through the sale of Government held equipment trust certificates. The prospects for a settlement with the Government and the improved net earnings reported by the carriers have been factors in maintaining stability in the market for railroad issues.

Earnings of public utility, particularly power and light companies, continue to improve and the bonds of such companies remain in favor with investors. There have been comparatively few issues of this class, but those offered were well taken.

Many domestic issues bearing high coupon rates are now selling at a premium. Such bonds, however, are unlikely to advance much beyond their call price, and, in consequence, the premium to which they may rise is limited, regardless of the yield, by the call price. There has been some selling by holders of such bonds which are now near their call price, in order to reinvest funds in bonds of lower coupon rates which have better possibilities of appreciation.

New bond issues during September were the third largest of any month this year. A total of approximately $360,000,000 was offered, only about $36,000,000 of which was for refunding purposes and $50,000,000 for foreign government loans. The railway equipments sold by the Government in the latter part of the month amount to nearly $100,000,000 of this total.

General Situation Abroad.

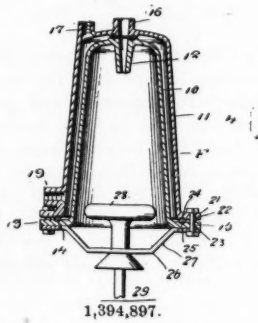
Reports from agricultural areas throughout the world as to grain crops of all kinds indicate that there are ample supplies of food this year for all, and that the needs of Russia can readily be met if the required funds are provided and transportation is afforded to make efficient distribution possible.

The slow and difficult journey towards normal economic conditions continues, but it is now fairly apparent that the task of reorganizing the wrecked system of exchanges between nations is not likely to be carried forward under any definitely agreed plan between the peoples of the world. Reliance must lie in individual industry and thrift and a willingness to establish industrial tranquility.

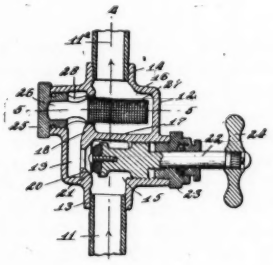
Patents

Plumbing Department.

1,394,897. Water-Heater. John G. Haus, Weirton, W. Va. A water heater comprising an outer shell provided in its upper portion at one side with an outlet nipple for connection of an outlet pipe, said outer shell being formed at one side in its lower portion with a nipple for connection of an inlet pipe, an inner shell disposed within and spaced from said outer shell whereby to provide an annular water chamber, a transverse bracket secured beneath said superposed shell, a burner carried by said bracket, said outer shell being formed centrally of its top with a tubular upward extension and the inner shell being provided with a tubular downward extension registering with the first named extension, and means cutting off communication between said chamber and the bores of said extensions.

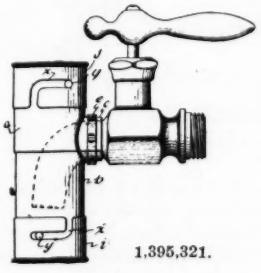


1,394,897.

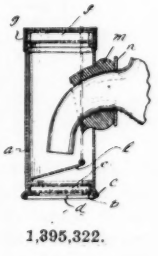


1,394,762.

1,394,762. Combined Stopcock and Strainer. Anton C. Schuermann, Decatur Ill., assignor to Adolph Mueller, trustee, Decatur, Ill. A fitting of the class described, comprised a casing having inlet and outlet ports, a diaphragm dividing said casing into inlet and outlet chambers, a valve controlling flow through one of said chambers, a strainer on one side of said diaphragm, and a hollow ported member on the other side of said diaphragm, through which flow passes, said ported member being removable to permit access to the strainer.



1,395,321.



1,395,322.

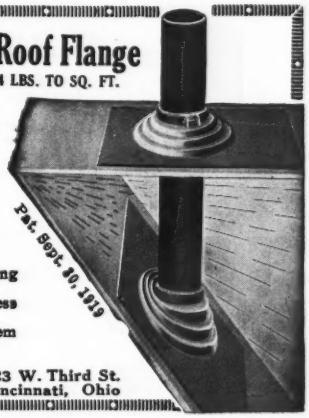
1,395,321. Attachment for Faucets. Frank P. Williams, Detroit, Mich. An attachment for faucets, comprising an upright barrel having an open lower end and an opening through the side of the barrel, means for clamping the barrel to the elbow of a faucet which passes through the said opening in the side of the barrel, means for closing the lower end of the barrel, and a bubbling fountain device in the upper end of the barrel operated when the lower end of the barrel is closed off.

1,395,322. Faucet Attachment. Frank P. Williams, Detroit, Mich., assignor to E. E. Gudka Mfg. Co., Detroit,

Retlaw Telescopic Roof Flange

A ONE-PIECE LEAD FLANGE, 4 LBS. TO SQ. FT.

Drawn into circular corrugations.
Extremely pliable—no seam.
Allows for settling of roof or pipe.
Adjustable to any angle.
Allows for contraction and expansion.
Collapse one side—draw out other.
Draw up band, compressing lead around pipe.
On like a flash—costs less than hand made.
Ask your jobber about them or write us for particulars.



The Harker Mfg. Co. 123 W. Third St. Cincinnati, Ohio

"BRE HYGIENIC" SPRING SEAT

Just the seat for that office building or factory job. It has an adjustable spring tension. A spring shock absorber that takes all jar and strain from the bowl. A stop that keeps the seat from striking fixtures in back and a "BRE HYGIENIC" seat.

Get our special prices for your show room or window display.

No. 250

BRE MFG. CO.
Hyde Park Dist., Boston, Mass.

Burman "Unit" Laundry Faucet

Simplest, Most Convenient and Least Expensive Faucet Made

Supplies hot, cold, or temperate water to either tray by slight movement of spout. Only two valves instead of four faucets. Saves its price by eliminating pipe and fittings. Clamps securely to back of tray.

Easy to install. Makes a neat job.

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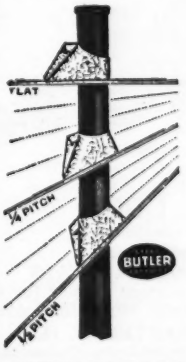
BURMAN SPECIALTY CO.
1908 Lincoln St. N. E., Minneapolis, Minn.



THE OVERTON

Adjustable Roof Flashing is in a class all its own.

A special feature is the "V" which forms a metal spring. This assures a perfectly air-tight joint.

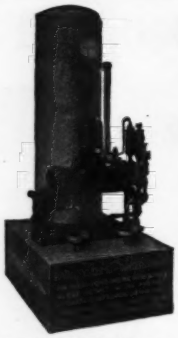
Hugs any pipe—water tight—fits any angle. Adjusts itself without turning or twisting.

Galvanized iron or copper.

Write for descriptive literature

Manufactured by

Butler Manufacturing Co.
Minneapolis, Minn.



Paul "Money-Maker" Demonstrator for Shallow Wells.

A Paul Demonstrator

in your show room will prove a business-getter and money-maker

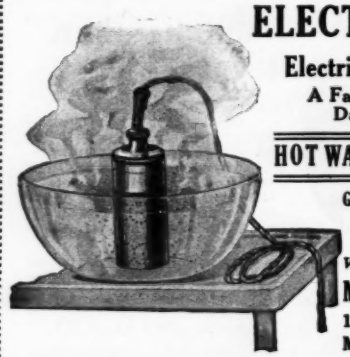
WATER PAUL SYSTEMS

Our special sales literature is helping many PAUL dealers to increase their water supply sales. It will pay you to investigate.

Write for particulars.

Fort Wayne Engineering and Manufacturing Co.

Main Office and Factory
1725 N. Harrison St., Fort Wayne, Ind.



ELECTRO-BOIL

Electric Water Heater

A Faithful Servant, Day or Night.

HOT WATER INSTANTLY

Guaranteed never to burn out.

A profitable line for the dealer.

Write for particulars.

Milwaukee Mfg. Co.
1316 Fond du Lac Ave.
MILWAUKEE, WIS.

For Heating Steam or Hot Water Radiation

WITH GAS

Best Results Are Obtained With

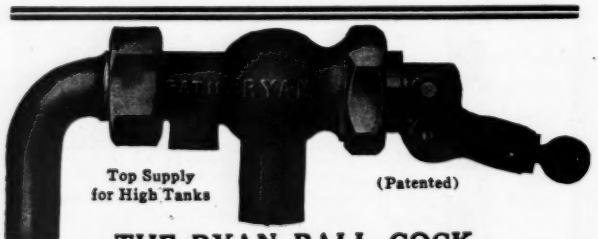
KAY-SOLA

GAS FIRED HEATING BOILERS

MINIMUM FLOOR SPACE — **MAXIMUM HEAT RESULTS**

For Buildings With or Without a Cellar

The Solar Engineering Corporation
505 Fifth Ave. Dept. E New York, N. Y.



Top Supply for High Tanks

(Patented)

THE RYAN BALL COCK

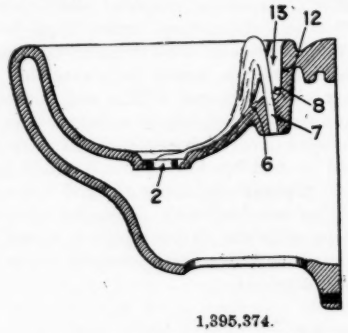
Operates perfectly under all conditions

Positive shut off. Removable gun metal seat.
Install the Ryan and avoid tank troubles.
Also made in elevated pattern and bottom supply for low tanks and bottom supply for high tanks. Write for folders.

EXETER BRASS WORKS, EXETER, N. H.

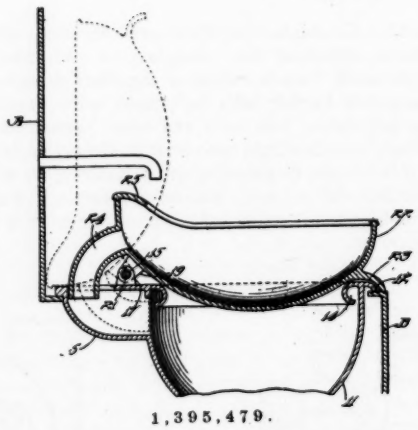
New York Office: 50 Cliff Street **Henry Stein, Representative**

Mich., a corporation of Michigan. An attachment for a faucet, comprising a barrel having a bubbling fountain orifice in its top and an aperture through its side adapted to allow a faucet elbow to enter into the barrel, a rubber washer having a conical exterior adapted to be fitted over the faucet elbow and adapted to engage in said aperture, and a metal washer fitting over the faucet elbow ahead of the rubber washer, and means between the washer and the barrel for drawing the barrel into water-tight relation with respect to the rubber washer.



1,395,374.

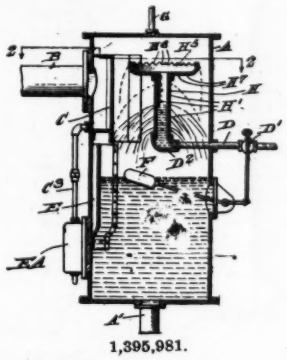
1,395,374. Drinking Fountain. Edward T. Webster, Milwaukee, Wis. A drinking fountain comprising the combination of a bowl having a discharge aperture and provided with an inclined ledge at one side and an inclined side wall leading downwardly from the ledge toward the said discharge aperture, and means for delivering a jet of water in a nearly vertical direction from the ledge at such an angle to the vertical as to allow the water to turn inwardly and fall to said inclined side wall between the said ledge and the said discharge aperture of the bowl substantially as shown.



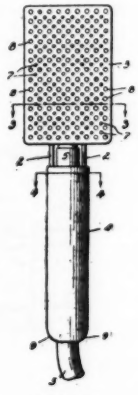
1,395,479.

1,395,479. Combined Toilet and Lavatory. William G. Bunker, Augusta, Me. In combination, a toilet and lavatory, the toilet comprising a bowl having a suitable support, a rear extension portion having a passage which opens into the side of said bowl below the rim and having an opening in the top, said lavatory comprising a bowl hinged to said toilet extension and forming a cover for the toilet bowl, and having a discharge opening in the rear side at a point somewhat below the top but at some distance above the bottom, and a discharge pipe, one end of which connects with said discharge opening from the lavatory bowl, the other end leading into the top opening of said toilet extension, whereby when the lavatory bowl is turned up on its hinge said discharge pipe will telescope into the said toilet extension and discharge the contents of the lavatory bowl into the toilet bowl.

1,395,981. Water Heater. Joseph W. Gamble, Philadelphia, Pa., assignor, by mesne assignments, to H. S. B. W.-Cochrane Corporation, Philadelphia, Pa., a corporation of Pennsylvania. In an open water heater, the combination with a heating chamber having a steam inlet opening into its upper portion and the water outlet opening from its lower portion, of water supply means comprising a conduit having a vertical portion which is located in said chamber and receives the water to be heated at its lower end, said vertical conduit portion having restricted outlet orifices formed in it at different levels, and of an aggregate discharge capacity greater than the water supplied to the conduit.



1,395,981.

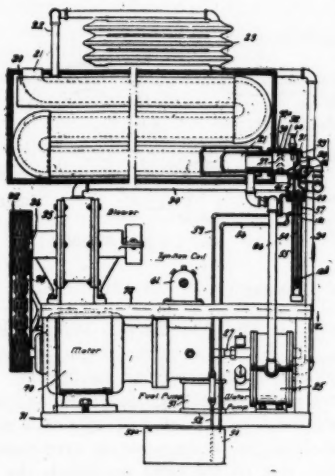


1,895,763.

1,395,763. Bath Brush and Sprayer. James A. Mulherin, St. Louis, Mo., assignor of one-third to Henry D. Delkeskamp, St. Louis, Mo. A fountain brush including a hollow rubber head provided with a marginal groove intermediate its faces, a handle equipped with a frame mounted in said groove and lying within the plane of the head, and a tube engaged with the head for supplying water to the latter, one face of the head having apertures formed therein through which the water is emitted.

Heating Department.

1,395,496. Heating System. John H. Hunt, Dayton, Ohio, assignor to The Dayton Engineering Laboratories Company, a corporation of Ohio. In a heating system, the combination with a heat generator including a liquid fuel



1,395,496

burner; of an air pressure system for the burner; a fuel system including a supply tank and fuel reservoir; means dependent on the air pressure system for delivering fuel

CRANE VALVES

HAYDENVILLE
Self-Closing
BIBBS and COCKS

Have stood the test of time.

You are making a serious mistake if you do not use them.

THE HAYDENVILLE COMPANY
Haydenville, Mass.

MYERS Self-Oiling POWER PUMPS

Ideal for service in mills, mines, factories — just as practical for home and farm use. Are self-oiling, have enclosed working parts, extra large valves, improved method of power application and other features which simplify installation and operation, reduce overhead costs, and insure dependable water facilities. Styles and sizes to meet depth, capacity, installation and power requirements. Literature on request.

Other MYERS "Honor-Bilt" PRODUCTS —
Hand and Power Pumps for Every Purpose — Hay Tools and Door Hangers — Stone Ladders and Bicycle Stands.

CATALOG ON REQUEST
F. E. MYERS & BRO.
ASHLAND PUMP & HAY TOOL WORKS
ASHLAND ESTABLISHED 1870 OHIO

Tank Fittings of Quality

1856 "McSHANE" 1921

The ORIGINAL Compound Lever Ball Cock
Elevated, Low-Down, Top and Bottom Supply
Tank Levers and Valves

McSHANE BELL FOUNDRY CO.
BALTIMORE, MARYLAND

"Reading" Specialties

Hot Water - Steam Vapor and Vacuum Heating Embody Advanced Ideas

The Reading Heater & Supply Co., Inc. Reading, Pa.

Free for the Asking

This Catalog contains interesting details on

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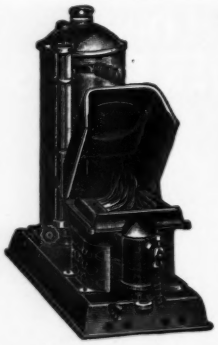
Gives you the information you want regarding the **"Reading" Tank-in-Basement System,** modern installation methods, fuel saving, uniform heat, etc. **Send for your copy today.**

The Reading Heater & Supply Co., Inc., Reading, Pa.



No. 25 DOUBLE BLAST

Results Are What Count

Mechanics who use DOUBLE BLAST Gasoline Fire Pots know that the maximum amount of heat can be obtained from the minimum amount of fuel, by using a DOUBLE BLAST.

The letters of the words, "DOUBLE BLAST," aptly represent many important and superior points in the construction and operation of the DOUBLE BLAST. Read them over.

Double Burners	Best
Odorless	Labor Savers
Unrivaled	Aluminum Bronzed
Blue Flame	Safety
Lasting	Time Savers
Economical	

Leading jobbers handle them. If your jobber does not handle them, send us your order and we will ship direct. Additional information and circulars will be furnished upon application.

Double Blast Mfg. Co.
20th and State Sts. NORTH CHICAGO, ILL.

Stands the Hard Knocks

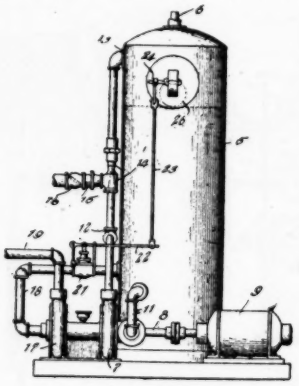
A cutter wheel that reduces the labor of pipe cutting to the minimum and will stand up, day in and day out, without breaking, is worth knowing about.

B&B THIN BLADE PIPE CUTTER WHEEL has proved superior in service to any other wheel made. Makes a clear, clean cut without burr. Does not spread metal apart. Made of highest class tool steel scientifically tempered. Every B & B Cutter Wheel is positively guaranteed. Get one from your jobber. Test it for yourself. You'll want more.

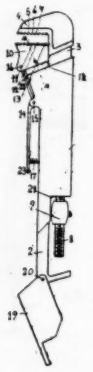
B & B TOOL & MACHINE WORKS
549 W. Washington Blvd. CHICAGO
Cutter Wheel Specialists

from the reservoir to the burner; and common means independent of the heat generator for controlling the rate of air supply and of fuel supply.

1,395,624. Vacuum and Boiler Feed Apparatus. Howard A. Young, Chicago, Ill. In an apparatus of the character described, the combination of a tank, means for delivering gases and water of condensation from a heating system to said tank, a pump connected with the tank, and means controlled by the water level in said tank for admitting water from the tank to said pump, whereby such surplus water is delivered under pressure to a boiler or the like.

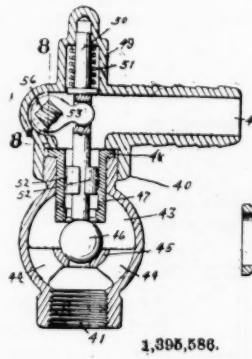


1,395,624.

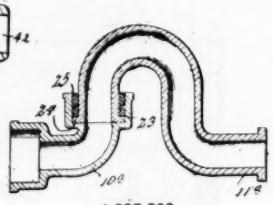


1,395,785.

1,395,785. Combined Wrench and Pipe-Tongs. Christen Andersen, Hurup, Denmark. In a wrench of the class described, a handle, a jaw slidably mounted for movement longitudinally of the handle and having a threaded shank, a nut on said shank for adjusting the jaw as aforesaid, a second jaw slidable transversely of the handle and first mentioned jaw, a lever connected to the transversely sliding jaw for actuating the same, spring means co-operating with the lever and tending to shift the transversely sliding jaw toward the handle, and a movable section on the handle co-operating with the shank nut to hold the longitudinally sliding jaw in adjusted position, said section being shiftable to free the last mentioned jaw for movement.



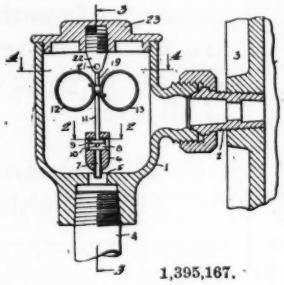
1,395,586.



1,395,808.

1,395,586. Automatic Shut-Off Valve. William F. Krichbaum, Irvington, N. J. In a valve of the character described, the combination of a casing having an inlet, an outlet and a valve port connecting said inlet and said outlet, a valve controlling said port and mounted upon one side there of to close the same upon a preponderance of pressure upon that side of the port on which the valve is mounted, a rigid plunger on the other side of the port for holding said valve open, guides independent of the valve for holding said plunger against lateral displacement, a spring normally actuating said plunger to hold the valve yieldingly open, and means for opening said valve against pressure.

1,395,808. Pipe-Joint. Eugene Forrer, Budd Lake, N. J. A coupling comprising one right angular tubular member having a short end and a long end, a relatively deep cylindrical socket of corresponding dimensions formed at the extremity of each end portion, a second tubular member having a semi-circular bend at one end and a right angular bend at its other end, a flange at each extremity of the second member, either adapted to fit in either socket, whereby when the semi-circular terminal of the second member is inserted in the socket of the short end of the first member the other terminals may be in alinement and capable of relative rotation, and rings inserted in said socket after the flanged terminal is inserted to form a packing and hold the members together.



1,395,167.

1,395,167. Thermostatic Trap. Reuben N. Trane, La Crosse, Wis. A thermostatically controlled device comprising a thermostatic element of substantially the shape of a figure 8, and a controlling member secured to the element at the meeting of the two loops thereof operated by the combined effect of the two loops.

Post Office Starts Campaign for Better Packing of Parcels.

Postmaster Arthur C. Lueder, of Chicago, has announced that the Post Office Department and the express and railway companies have joined in a nation-wide effort to stimulate greater interest in the good packing of parcel post, express, and freight packages. November has been selected as the "Perfect Package Month" during which an active campaign will be conducted to induce all mailers and shippers to give their attention to the manner in which their goods are packed, kind of containers used, and the writing or marking addresses plainly and completely. This is of great public interest, because in the end the public must pay the bills for lost or damaged shipments. Therefore, the public should be deeply interested in the campaign which will tend to reduce losses and improve the service.

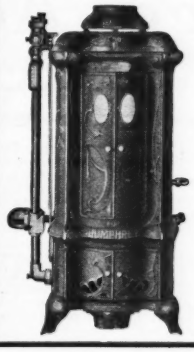
Christmas will soon be here, and it is especially desirable that care should be exercised in the preparation of packages at this time, because now the occasional mailer or shipper will be sending packages. Articles easily broken should be carefully wrapped in corrugated or shock absorbing paper. The department stores use this kind of paper in delivering breakable articles, and it would be an excellent practice to save this paper for use when sending packages by mail or express.

"It is obviously to the interest of senders to see that parcels are carefully packed, wrapped and tied securely, but they must not be sealed as sealed parcels are subject to the letter rates of postage," says the announcement.

Agricultural and live stock loans totaling $2,074,000 were made by the War Finance Corporation, recently. The loans were advanced to agricultural interests in Western, Middle-Western and Southern territory.

Secretary Hoover announces that construction of more than 6,261 miles of highway at a cost of $76,400,000 and employment of more than 150,000 workmen is about to be undertaken by 30 states as a result of the recent passage of Federal Highway act.

A Household Word



The name "Humphrey" in connection with Automatic Gas Water Heaters is known the country over. The dealer and plumber who sell it get the advantage of this prestige which results in easy sales and satisfactory service.

Try the Humphrey on your next water heater job.

Write for full description

HUMPHREY COMPANY
Div. Ruud Mfg. Co.
Kalamazoo, Mich.

PORCELA

The Bath Tub Cleaner

Contains no grit.
No acid.
Keeps fixtures like new.

Most contracting plumbers use Porcela and recommend it to their customers.

If you haven't Porcela in stock order from your jobber. Write us for free sample can and descriptive folder.

PORCELA-RADAX CO.
NEW BRIGHTON, PA.

Lowest Fuel Cost

and constant hot water supply is the service you deliver with the installation of the

Little Hercules
Water Heater

You should know its special features—all good selling points

Catalog on request

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LITTLE HERCULES
Supplied through jobbers

CONTINENTAL BRASS AND FOUNDRIES CO.
St. Louis, Mo. **Belleville, Ill.**
Western Distributors of Richardson Vapor Vacuum Heating System

SOMETHING ENTIRELY NEW IN

SILL-COCKS

Semi-Finished, Polished aluminum wheel Style N. Style O—Heavy rough pattern built for service.

STYLE N **Both shown in catalog D** **STYLE O**

KINSEY & MAHLER CO. ***Peoria, Ill.***

Classified Advertisements

8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00. One inch $4.00. Cash must accompany order. Copy should reach us Tuesday morning.

Situations Open

SALESMEN WANTED—TWO YOUNG live wire men to sell high grade line of pipe tools. Address 429, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill. 11-26-12-3

SALESMAN

WANTED — A HIGH CLASS salesman to sell plumbing supply jobbers in Kansas City territory. We manufacture complete Toilet Combinations and Brass Specialties of all descriptions. Liberal commission. State experience and full particulars in first letter. Communications confidential. Address 420, "Domestic Engineering," 1900 Prairie Ave., Chicago.

WANTED—PLUMBING SALESMAN to carry plumbing specialty as a side line, on commission basis. Address 400, "Domestic Engineering," 1900 Prairie Ave., Chicago. 10-8

SALESMEN

NEED SEVERAL LIVE WIRE plumbing specialty salesmen selling patented rubber and brass goods for toilet seats and tanks direct to the plumbers in entire United States. State territory desired. Experience and full particulars in first letter. Communications confidential. Address 421, "Domestic Engineering," 1900 Prairie Ave., Chicago.

Situations Wanted

SALES REPRESENTATIVE—HIGH grade business representative with big business experience in plumbing, heating and mill supplies wants several lines of staple plumbing, heating and mill supply goods to sell in West and Coast territories with headquarters in San Francisco. Only good quality merchandise at the right prices and the product of reliable and responsible concerns will be considered. Give complete details of your proposition, policy and commission paid. Advise under what conditions you will consider carrying a consignment account. Address 423, "Domestic Engineering," 1900 Prairie Ave., Chicago. 11-19-26

POSITION WANTED—BY A1 STEAMfitter thoroughly experienced in large heating and ventilating systems. Would consider foreman of heating department. State full particulars in first letter. Address 426, "Domestic Engineering" 1900 Prairie Ave. Chicago. 11-26

RESPONSIBLE SALES AGENCY wants plumbing and heating lines to sell direct to the trade. Territory Chicago and its suburbs. Can carry stock and make own deliveries. Can furnish satisfactory references and bond if necessary. Address 427, "Domestic Engineering, 1900 Prairie Ave., Chicago. 11-26

For Sale

FOR SALE—AT 10% BELOW MARKET, one 1625 and one 2625 square foot, sectional boiler. New. Ball & Neal, Fulton, Mo. 10-15

FOR SALE—PLUMBING SHOP LOcated in Chicago Loop. Well equipped for large work. Great possibilities. Must sell on account of health before first of year. Good chance for one or two good men to get a going business that has been successful. Address 430, "Domestic Engineering," 1900 Prairie Ave., Chicago. 11-26

FOR SALE—A FIRST CLASS PLUMBing and heating business in live western state. Shop regularly employs several men, and has good jobbing trade. Reason for selling, have other line of work in view. Will invoice five to eight thousand dollars. Address 417, "Domestic Engineering," 1900 Prairie Ave., Chicago. 11-5/26

Miscellaneous

TIME SHEETS, JOB TICKETS, ESTImating blanks, etc., for plumbers. Small or large lots. Reasonable. Samples and prices free. Prompt service. Louis Fink & Sons, Inc., Laurel Springs, N. J. 7-30 tf

SELL YOUR SURPLUS COUPLINGS and fittings. Write us. The A. & J. Mfg. Co., 557 W. Lake St., Chicago. tf

LEAD—COPPER—BRASS—HIGHEST cash prices paid for plumbers' scrap metals in Chicago. What have you? Address 428, "Domestic Engineering," 1900 Prairie Ave., Chicago. 11-26

COUPLINGS

Save them from the scrap, and protect them from the elements of weather as they are worth money to you. We buy large or small lots of all sizes.

C. N. Cressman Co.
Philadelphia, Pa.

PLUMBING MATERIALS AND TOOLS Wanted—Have several tracks of Minnesota and Dakota land which I wish to exchange for stock of plumbing supplies. Nelson Plumbing and Heating, Fort Dodge, Iowa. 11-26-12-3

Government Proposals

TREASURY DEPARTMENT, SUPERvising Architect's Office, Washington, D. C., November 17, 1921. Sealed proposals will be opened in this office at 3 p. m., December 6, 1921, for making certain changes to the services, etc., on the site for the Infirmary, Wings A and B, at the United States Public Health Service Hospital No. 60, at Oteen, N. Carolina, in accordance with the drawings and specification, copies of which may be had at this office, or at the office of the Custodian at Oteen, N. Carolina, in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect. 11-26

Books for Your Trade Library

PRINCIPLES AND PRACTICE OF COST ACCOUNTING. By F. H. Baugh. Presents a modern method of accounting for the plumber and steamfitter. A text and form book for those who would become expert in keeping track of selling costs, overhead expense, depreciation, administrative expense, etc. Illustrated by numerous forms. Size 6x9 in. 194 pages. Half leather. Price, $3.00.

Domestic Engineering
1900 Prairie Avenue, Chicago

PLENTY OF
HOT WATER
NO EXTRA EXPENSE

EASILY connected to outside of steam, vapor or hot water boiler; does away with fuel-wasting coil in fire pot. Uses surplus heat of boiler. Does not overheat or underheat. Will not burn out, once installed.

An unusual opportunity for live dealers. Order now and be prepared for the demand being created. We furnish co-operation and practical sales helps to give you full benefit of our national advertising. List price, $16.00.

Write for full details

THE HOTSTREAM HEATER CO.
"Makers of Heaters that Heat"
CLEVELAND, Ohio

The Hotstream

We also make a complete line of Gas and Kerosene Water Heaters.

INDIRECT WATER HEATER

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